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ABSTRACT

This annotated bibliography was prepared to improve the ability of Project TALENT to respond to inquiries from potential users of the data base. The intended audience includes researchers using the data base, and staff interested in TALENT data bank studies. The period of time covered by the publications listed is 1959 through November 1978. Most of the studies using Project TALENT data focus on educational/occupational development, and in particular: academic ability, school output, career choice, career guidance, career stability, college attendance, high school dropouts, race interaction with other variables, and science careers. The bibliography is divided into two main sections: (1) 137 annotated references for final reports of analytic studies using TALENT data; and (2) 111 unannotated references for TALENT-related publications that are not main reports of analytic studies. Each abstract gives the bibliographic reference, sponsor, sample and variables, and analytic procedures/findings. Abstracts are numbered consecutively and include project numbers; references not abstracted are listed separately. (Author/GK)

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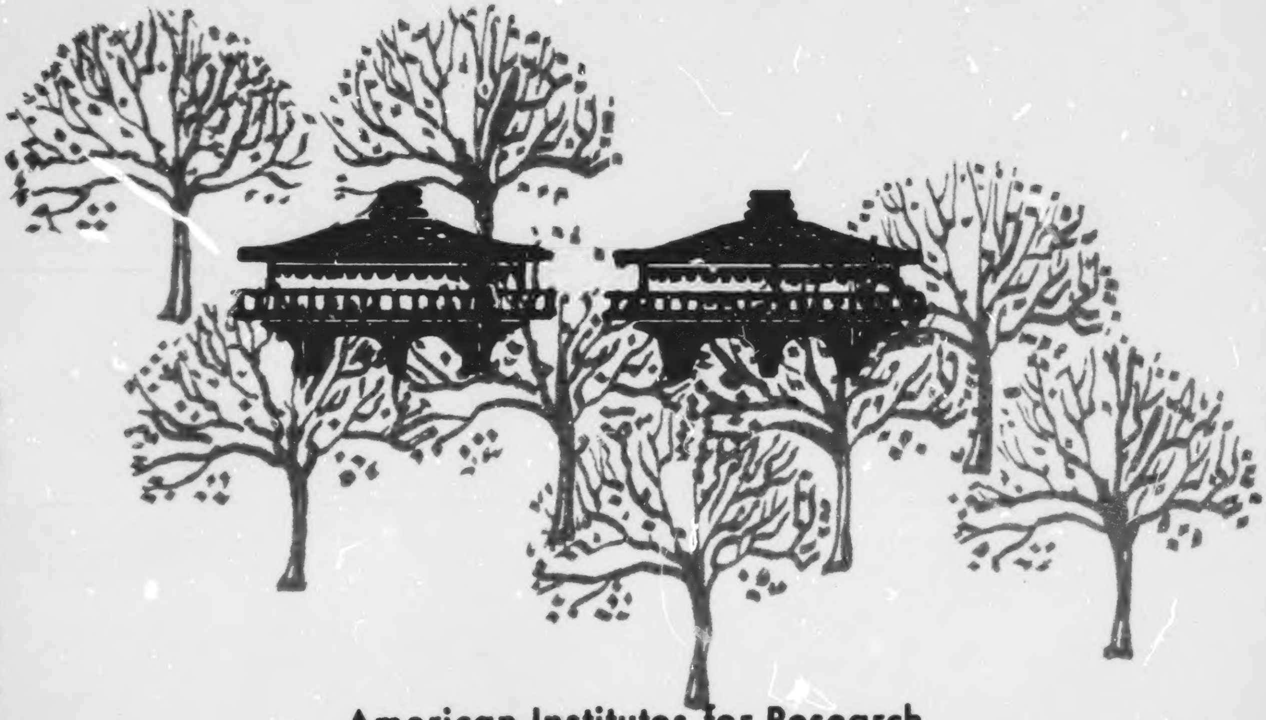
Publications Based on Project TALENT Data:
An Annotated Bibliography

Emily A. Campbell



American Institutes for Research
Palo Alto, California
January 1979

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Emily A. Campbell

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ACKNOWLEDGMENTS

I would first of all like to acknowledge my debt to Carolyn B. Helliwell's 1973 work on the first draft of this bibliography. I used her outline for the bibliography, her format for the abstracts, and the abstracts themselves as a starting point for my work. Parts of her abstracts have been used in this version, which has been edited with reference to the original documents.

Others who helped in the production of this bibliography are Charlotte MacDonald, who helped write some of the abstracts; Ronald P. Abeles, who reviewed the final draft; and Donald H. McLaughlin, Lauri Steel, and Lauress L. Wise, who provided organizational help and advice on the project.

Emily Campbell

INTRODUCTION

Purpose and Design

Intended Audience

This annotated bibliography has been prepared, with funding from the National Institute of Education, to improve the ability of Project TALENT to respond to inquiries from potential users of the data base and other interested persons. The intended audience for the report includes researchers who wish to use the TALENT Data Bank for their own studies and would like to find out how the data have been used in the past, as well as TALENT sponsors and staff who want to know about topics and findings of TALENT studies, numbers of studies conducted, organizations that have sponsored TALENT data bank studies, or what reports have resulted from a given TALENT-related project.

Period of Time Covered

The period of time covered by the publications listed in this bibliography extends from the planning stages for Project TALENT in 1959 to November 1978. Studies using the Project TALENT Data Bank have been done ever since the data began to be available (after the 1960 data collection), but the majority of abstracts describe publications based on studies conducted since 1965, when the Data Bank was officially inaugurated.

Topics and Sponsors of TALENT Studies

The majority of studies using TALENT data have focused on educational and occupational development. These factors have been related to abilities, socioeconomic status of family, sex, race, characteristics of the high school, interests, personality, and other variables.

Of course, given the nature of Project TALENT, most of the studies using TALENT data focused at least in part on academic ability. Ability was measured by two TALENT composites (IQ and General Academic Aptitude); by using all or part of the set of TALENT ability tests; by using the

MAP ability factor scores based on the TALENT ability tests; or by creating a new composite from the TALENT ability tests especially for a particular study. Some studies measured school effects on ability change; some studied the effect of ability on later earnings; some studied ability differences between various groups, such as the sexes, ethnic groups, different socioeconomic levels, persons obtaining different kinds of post-high school education, persons who were or were not athletes in high school--ability has been related to practically every other variable available from TALENT. Because the ability variable is so omnipresent in TALENT studies, we have not included it in our index. (Many of the studies that did not focus on individuals' abilities are indexed under General School Characteristics Questionnaire.)

Aside from ability, the most frequently studied topic has been "school outputs"--studies that have related school inputs such as students' abilities, per-pupil expenditures, amount of teacher training, and socioeconomic level of community to school outputs such as student growth in cognitive skills, college attendance, and later occupational prestige and earnings. Other topics on which many reports have been written include career choice, career guidance, career stability, college attendance, high school dropouts, race interactions with other variables, and science careers.

The agency most often listed in this bibliography as funding TALENT studies is the U.S. Department of Health, Education, and Welfare and its suboffices, the U.S. Office of Education and the National Institute of Education. These agencies have funded not only the main TALENT data collection effort but several substudies by inhouse and outside users. Other frequently mentioned sponsors are the Carnegie Corporation, National Center for Education Statistics, National Science Foundation, and the U.S. Air Force.

Preparation of the Bibliography

In preparing this publication, we started with a bibliography of TALENT publications prepared in 1973. Abstracts were written for publications received since then, and researchers from whom no report had been received were asked to send copies of publications resulting from their projects. In addition, a computer-based (DIALOG) search was made of ERIC, PSYCHOLOGICAL ABSTRACTS, SOCIOLOGICAL ABSTRACTS, and DISSERTATION ABSTRACTS to locate any materials referring to Project TALENT.

Organization

The bibliography is divided into two main sections. In the first section, annotated references are given for final reports of analytic studies using TALENT data. These include the main TALENT data collection efforts (1960, retest, follow-ups), substudies on specific topics conducted by AIR staff, and studies conducted by non-AIR researchers who have contracted to use TALENT data. When additional publications have resulted from one of the annotated studies--for instance, journal articles or presentations at conferences--they are listed following the annotation.

The second section contains unannotated references for TALENT-related publications that are not the main reports of analytic studies. These include reports on methodological issues and general presentations at conferences to inform the public about Project TALENT, its resources and progress.

Each abstract gives the bibliographic reference, the sponsor (if applicable--sponsors are not listed for dissertations or for reports of the main TALENT data collection), the information provided by Project TALENT (sample and variables), the general procedures used for analyzing the data, and some of the findings. For those interested in learning more about a particular TALENT-related publication, some of the publications are available from Publications Office, American Institutes for Research, P.O. Box 1113, Palo Alto, California 94302. A list of these publications can be obtained by writing to Project TALENT. Some publications are in the ERIC system, while still others can be obtained from libraries.

Each abstract is numbered consecutively and is referenced in the index as A1, A2, etc. References that are not abstracted are listed separately, also numbered consecutively, and listed in the index as B1, B2, etc. In parentheses after the initial bibliographic listing for each abstract is the project number. Projects beginning with A, B, C, D, E, F, G, or H or numbered in the series 30000, 40000, 50000, 60000, or 70000 are inhouse AIR projects, that is, they were conducted by members of the AIR staff. Projects with numbers beginning with T or in the series 80000 or 90000 were conducted by non-AIR users who contracted for the use of the TALENT data.

Updating

While an attempt was made to be as comprehensive as possible in compiling this bibliography, it was inevitable that some publications and reports would be missed. Hopefully, future editions of the bibliography will be able to capture such missing references, and we would appreciate receiving information about reports that have been inadvertently omitted.

The Project TALENT Data Base

Purpose and Design of Project TALENT

Within the overall goal of understanding the nature and development of the talents of America's young men and women, Project TALENT aimed to obtain a national inventory of human resources, to improve understanding of career choices and the value of education in preparing for life work, to serve as a large sample against which educational and psychological tests could be standardized, and to develop a vocational counseling system based on nationally representative longitudinal data.

In March 1960, Project TALENT administered a two-day battery of paper-and-pencil tests to about 400,000 high school students attending 5% of all the secondary schools in the United States. The respondents were followed up one, five, and eleven years after high school graduation, and plans are being made for a 20-year follow-up.

1960 Data Collection

1960 sample. A stratified random sample was drawn of all public, parochial, and private secondary schools in the United States that contained grade 12. All students in grades 9-12 in these high schools were included, as well as 9th graders in associated junior high schools. The 1960 sample is described in more detail in Flanagan et al., *Design for a Study of American Youth* (1962).

1960 special subsamples. In Knox County, Tennessee, the interest of local school authorities led to the inclusion of nearly every student in the county in grades 8-12. This TALENT "saturation sample" has been used in several studies; it has special value because of its inclusion of all students in a five-grade range. Further information can be found in *The Project TALENT Data Bank Handbook*. Another special 1960 subsample was the 15-year-old sample. An attempt was made to locate and test 15-year-olds *not* in school in 10% of the participating school districts. The data obtained from this survey were used to correct for bias arising from differences in characteristics of high school persistors and dropouts. The 15-year-old sample was used in a few TALENT studies and is described more fully in Shaycoft et al., *Studies of a Complete Age Group--Age 15* (1963).

1960 test battery. The 1960 battery contained numerous aptitude and achievement tests and three questionnaires or inventories. The Interest Inventory was concerned with occupational interests. The Student Information Blank asked about the student's social background, parental education and income, other family members, and his activities: school activities, hobbies, long-range plans, etc. The Student Activities Inventory was a general personality inventory. Further information can be obtained from Flanagan et al., *Design for a Study of American Youth* (1962), which describes the tests and inventories, and from Flanagan et al., *The American High School Student* (1964), which presents the distributions of scores on these tests.

Tables 1 and 2 give a list of the names of the scales used as well as the composites most often used in TALENT studies. Of particular interest is a set of 22 factor scores derived from the 1960 battery that

Table 1

TALENT 1960 Scales*

APTITUDE AND ACHIEVEMENT TESTS

Information Test

- Part I (subscales)
  - Screening
  - Vocabulary
  - Literature
  - Music
  - Social studies
  - Mathematics
  - Physical science
  - Biological science
  - Scientific attitude
  - Aeronautics and space
  - Electricity and electronics
  - Mechanics
  - Farming
  - Home economics
  - Sports
- Part I Total

- Part II (subscales)
  - Art
  - Law
  - Health
  - Engineering
  - Architecture
  - Journalism
  - Foreign travel
  - Military
  - Accounting, business, sales
  - Practical knowledge
  - Clerical
  - Bible
  - Colors
  - Etiquette
  - Hunting
  - Fishing
  - Outdoor activities (other)
  - Photography
  - Games (sedentary)
  - Theater and ballet
  - Foods
  - Miscellaneous
- Part II Total

Other aptitude and achievement tests

- Memory for sentences
- Memory for words
- Disguised words
- English:
  - Spelling
  - Capitalization
  - Punctuation
  - English usage
  - Effective expression
  - English Total
- Word functions in sentences
- Reading comprehension
- Creativity
- Mechanical reasoning
- Visualization in two dimensions
- Visualization in three dimensions
- Abstract reasoning
- Mathematics:
  - Part I. Arithmetic reasoning
  - Part II. Introductory high school math
  - Part III. Advanced high school math
  - Subtotal I + II
  - Subtotal II + III
  - Total
- Arithmetic computation
- Table reading
- Clerical checking
- Object inspection

Miscellaneous

- Preferences test
- Themes:
  - My views about an ideal occupation
  - What high school means to me

INVENTORIES

Student Activities Inventory

- Sociability
- Social sensitivity
- Impulsiveness
- Vigor
- Calmness
- Tidiness
- Culture
- Leadership
- Self-confidence
- Mature personality

Interest Inventory

- Physical science, engineering, math
- Biological science and medicine
- Public service
- Literary-linguistic
- Social service
- Artistic
- Musical
- Sports
- Hunting and fishing
- Business management
- Sales
- Computation
- Office work
- Mechanical-technical
- Skilled trades
- Farming
- Labor

Student Information Blank

- high school curriculum, courses, grades
- guidance received in high school and elsewhere
- study habits and attitudes
- self-perception of writing and reading skills
- extracurricular activities: reading, hobbies, sports, other
- leadership roles
- social life
- work activities

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*Further information can be found in Appendix C of Five Years after High School.

Table 2

TALENT Composite Scores*

Ability Composites

- IQ
- General Academic Aptitude
- Verbal Aptitude
- Quantitative Aptitude
- Technical Aptitude
- Scientific Aptitude
- High School Academic Achievement
- Academic Achievement, curriculum-linked
- Foreign Language Aptitude
- Technical Aptitude, nonacademic
- Mathematics
- Technical Information

Background Composites

- Socioeconomic Index

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*More information can be found in Appendix C of Five Years after High School.

has been used in several TALENT studies (MAP factor scores). These scores, derived by Paul R. Lohnes and described in Lohnes, Measuring Adolescent Personality (1966), included 11 abilities factors and 11 motives factors. These MAP factors summarize the data and make them more manageable, and yet retain the ability to measure several dimensions of aptitude as compared with one-dimensional composites such as IQ or general academic aptitude. Table 3 lists the names of the 22 factor scores.

1960 school questionnaires. Three questionnaires were filled out by school personnel at the TALENT high schools. The General School Characteristics Questionnaire included questions on school policies, practices, and plant; size, training, and characteristics of the teaching staff; student body; community characteristics; principal; and courses

Table 3

MAP Factor Scores*

Ability Factors	Motives Factors
Verbal Knowledges	Conformity Needs
English Language	Business Interests
Visual Reasoning	Outdoors, Shop Interests
Mathematics	Scholasticism
Perceptual Speed and Accuracy	Cultural Interests
Screening	Science Interests
Hunting-Fishing	Activity Level
Memory	Leadership
Color/Foods	Impulsion
Etiquette	Sociability
Games	Introspection

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*Further information can be found in Lohnes, Measuring Adolescent Personality (1966).

offered. A second questionnaire related to the guidance program at the school, and the third school questionnaire, filled out by counselors, asked for information on their experience, job activities, and values. More information may be found in Flanagan et al., Studies of the American High School (1962).

1963 Retest

In 1963, in order to assess changes in students' abilities occurring over the high school years, all of the 12th graders in 118 of the high schools that had participated in the 1960 testing were given parts of the TALENT battery. Approximately three-fourths of these 12th graders had taken the TALENT battery in 1960 when most of them were in the 9th grade. In order to reduce the required testing time, six overlapping batteries were designed, each containing approximately half of the 1960 battery. Thus, although only part of the 1960 battery was administered to any particular participant, most of the tests in the 1960 battery were included in the retest as a whole. All of the students in each participating school were tested with the same battery. A more complete description of the retest study can be found in Shaycoft, The High School Years: Growth in Cognitive Skills (1967). Many TALENT studies have used the retest data as a measure of school effectiveness in terms of student growth during high school.

Follow-Up Surveys

The one-, five-, and 11-year follow-up surveys have collected data on the TALENT participants' educational, occupational, personal, and family development since high school. Information on college and other post-high school education, job, plans for future job and education, job satisfaction, marital status, number of children born and number of children planned has been obtained, as well as information on such topics as military experience, race, religion, health, community, smoking, driving, volunteer work, and assessments of one's experiences. (It should be noted that all studies which have focused on race or religion have had to use five-year follow-up data, since this was the earliest the law permitted surveys such as Project TALENT to collect data on race or religion of participants.)

Response rates to the mailed follow-up questionnaires varied from over 60% for the 12th grade one-year follow-up to about 20% for the 9th grade 11-year follow-up. In general, response rates fell off slightly each year. To overcome the problem of nonresponse bias, special surveys of representative samples of nonrespondents to each follow-up were conducted. Members of these special samples selected for intensive follow-up were located with the help of TALENT inhouse staff and regional coordinators across the country and were contacted by telephone or in person to secure their answers to the questionnaire items. The individuals who were located in the nonrespondent follow-ups and who provided data are called "special" respondents, as distinguished from the "regular" respondents who answered the mailed questionnaires. Various systems of case weights have been devised in order to deal with any attrition bias that may have been introduced into TALENT by the low response rates. More information on follow-up questions and results can be found in Flanagan et al., Project TALENT One-Year Follow-Up Studies (1966); Flanagan et al., Five Years after High School (1971); and the two volumes of The American Citizen: 11 Years after High School (Vol. I, Wilson & Wise, 1975; Vol. II, Wise et al., 1977). Information on follow-up methods and weights can be found in The Project TALENT Data Bank Handbook.

Table 4 summarizes the kinds of data collected in the 1960 testing and in the three follow-up surveys.

The Project TALENT Data Bank

Services offered include consultation on suitability of TALENT data for the needs of specific researchers; carrying out of data analyses; preparation of worktapes; follow-back matching of TALENT data to lists of individuals provided by the researcher; and complete study design, implementation, and report preparation for studies conceptualized by the requestor. More information may be found in The Project TALENT Data Bank Handbook.

Public use tapes. A service recently made available is the TALENT Public Use File, which contains data for a self-weighted subsample of 4,000 of the original 400,000 TALENT participants (1,000 men and women from each of the high school classes of 1960-1963). The file includes 1960 and 11-year follow-up data. The Public Use File, which is available from Project TALENT for $250, makes possible many exploratory and small-scale analyses that would not be feasible or cost-effective if the entire TALENT data base had to be processed.

Table 4

Summary of Data Collected

1960 TESTING		
APTITUDE, ABILITY, AND ACHIEVEMENT TESTS Language aptitude and ability (8 scales) Mathematics ability (3 scales) Visualization ability (2 scales) Complex intellectual aptitude (3 scales) General and specific knowledge (37 scales) DESCRIPTION OF SCHOOL General characteristics: kind, size, urban-rural, economic level, retention ratio, percent minority, region	DISPOSITIONAL TRAITS Self-descriptive adjectives (10 scales) OCCUPATIONAL AND ACTIVITY INTEREST INVENTORY Preference ratings for 205 activities and occupations (17 scales) BACKGROUND Family: parents' education and occupation, economic status, number of siblings and their educational experience	PERSONAL Health Current activities: school courses and grades, extracurricular activities, hobbies, reading and study habits, social activities Plans: college, military, career, marital Sex Date of birth
ONE-YEAR FOLLOW-UP SURVEY (1961-1964)		
EDUCATIONAL EXPERIENCE Kind and amount attained, grades, courses, plans for future, reasons for stopping, financial costs, perceived benefits	CAREER Work experience, occupation, income Job satisfaction, future plans	PERSONAL Marital status Health Military status and experience Geographical mobility Leisure and social activities Decisions regretted
FIVE-YEAR FOLLOW-UP SURVEY (1965-1968)		
EDUCATIONAL EXPERIENCE Kind and amount attained, degrees, years attended, grades, reasons for dropping out, perceived costs and benefits, financial costs	CAREER Work experience, occupation, income Job satisfaction, future plans Training received Reasons for stopping work Sources of income	PERSONAL Race, religion Marital status and history Spouse's education Number of children Health: own and parents' Geographical mobility Military status and experience Decisions regretted
ELEVEN-YEAR FOLLOW-UP SURVEY (1971-1974)		
EDUCATIONAL EXPERIENCE Kind and amount, degrees, occupational training in high school, noncollege training, colleges and dates attended, reasons for stopping, financial support during college, perceived value of education	CAREER Work experience, occupation, income Job satisfaction (15-25 dimensions), evaluation of job Career plans, reasons for stopping work	PERSONAL Race Marital status and history Spouse's education and career Childbearing history Ideal and expected family size Quality of life (15 areas) Geographical mobility Health Leisure and civic activities Military status and experience Discrimination experienced Political behavior

Note: Separate follow-up surveys were conducted for each of the four high school classes (one, five, and eleven years after their respective graduation). Some of the follow-up variables are available for one or two classes only.

GLOSSARY

While obviously it is not possible to fully explain technical terms in a short paragraph or two, it is hoped that the following glossary will be of assistance for those terms that are unfamiliar.

analysis of variance--method for testing the significance of the effects of one or more independent variables on a single dependent variable. Tests for significant main-effects and interaction-effects.

canonical correlations--technique for describing the degree of correlation between two sets of variables, as opposed to ordinary correlations (e.g., Pearsonian), which measure the degree of association between pairs of single variables.

continuous vs. discrete variable--a continuous variable has "complete" numerical values such as a decimal number, while a discrete variable is limited to only certain values (such as to only whole numbers, with no values permitted between the whole numbers).

control--a group of subjects may be set aside who are thought not to vary on some variables of interest. This control group must be similar to the group that does vary on all other variables (or as many as possible). For instance, in one study high school dropouts were compared to a control group of high school graduates who did not take any post-high school education; these subjects were selected because it was thought that they would be the most like the dropouts in all respects except dropping out of high school. The control group is sometimes called the comparison group.

correlation--variables that are correlated act together. For instance, if the same people that do well in the Abstract Reasoning Test are the ones that do well in geometry or algebra tests, then these tests would be correlated.

criterion group--the group that varies on a variable of interest. For instance, in the study comparing high school dropouts with graduates who had no post-high school education, the dropouts would be the criterion group. (See control)

cross-tabulations or contingency tables--an analysis of categorical variables showing the interrelationships between two or more variables. Results are often given in terms of the percentage of individuals falling into a particular "cell" of the contingency table. For example, sex (two categories) may be cross-tabulated with parental SES (three categories--low, medium, and high) to find out the percentage of men and women coming from different parental SES backgrounds.

cross-sectional study--a study that obtains data on subjects at one period in time. For instance, the TALENT 1960 testing taken by itself was a cross-sectional study of different students in four high school grades. (See longitudinal)

dependent variable--the variable that is considered to be the effect that one is trying to explain or understand. This term is used in contrast to the independent variable, which is considered to be the cause of changes in the dependent variable. For example, in a study of the question "Do better-educated teachers produce better students?" the students' test scores would be the dependent variable, while the amount of the teachers' education would be the independent variable.

discriminant analysis--procedure in which independent variables are analyzed to find which ones best discriminate between sample members belonging to different groups.

dummy variable--a variable that is stated so that its answer consists of two alternatives. For instance, "grade in high school" might be stated as four dummy variables--"Did you take the TALENT tests as a 9th grader?" (yes-no) "As a 10th grader?" (yes-no) "As a 11th grader?" (yes-no) "As a 12th grader?" (yes-no) This is helpful in some computer analyses.

factor analysis--a procedure in which a large number of variables are reduced to form a smaller number of variables or "factors." Factor analysis begins by considering the correlations among indicators and introduces a "reference system" for organizing indicators in terms of unnamed, hypothetical components. The correlations between an indicator and one of these hypothetical components--i.e., factors--is used to estimate what proportion of variance in indicator values can be explained by the factor. Indicators can then be combined in terms of their relationships to particular factors.

frequencies--numbers of sample members in each cell (column) of a table

frequency distributions--table showing numbers of sample members falling into each of the categories studied

GSC--TALENT's General School Characteristics Questionnaire (see Introduction)

independent variables--events whose changes may affect change in some other event being studied (the dependent variable). For instance, in a study of the question, "What factors raise or lower high school students' reading comprehension scores?" reading comprehension scores would be the dependent variable and the factors studied to see whether and how they affected the scores--such as pupils' family background, teacher salaries, number of books in the school library, or hours of homework assigned--would be the independent variables.

interaction--when the effects of two or more independent variables on a dependent variable cannot be predicted solely from a simple linear additive combination of the independent variables, the independent variables are said to "interact." In such cases, information is needed about the joint effect of the independent variables on the dependent variable. For example, assume a researcher is studying the impact of sex and socioeconomic status (SES) on General Academic Aptitude (GAA). If for men SES were positively related to GAA, but for women SES were negatively related to GAA, then SES and sex would be said to interact.

linear effects--the effects of a variable are linear if they are a simple additive function of the type $X = a + bY$. This is the most common statistical model underlying data analysis and significance testing.

longitudinal study--a study that follows individuals and/or variables over time. That is, more than one measurement point in time is involved. When the same individuals are measured at more than one point in time, the longitudinal study is referred to as a panel study. Project TALENT is an example of a longitudinal panel study.

multiple classification analysis--a form of regression or analysis of variance that indicates the unique effect of each category of an independent variable (or variables) on a dependent variable. It assumes that there are no significant interaction effects among the independent variables.

multivariate--simply means that more than one variable is involved in the analysis. Usually used in the context of attempting to understand the joint effects of several variables on a dependent variable (or variables).

percentage distributions--table showing percentages of sample members falling into each of the categories studied

path analysis--a form of causal analysis used most frequently with correlational data. It is a means of testing the appropriateness of various hypothetical models relating sets of variables, and in its simplest form is based upon multiple regression techniques.

quartiles, deciles--when a frequency distribution of a variable is divided into four equal parts (each part having the same number of individuals falling in it), it is said to be divided into quartiles. Deciles refers to the division of a frequency distribution into ten equal parts.

raw, weighted--these terms are applied to either individuals or values to indicate whether each individual or variable is counted only once (raw) or more than once (weighted) in the construction of a sample of individuals or of an index combining several variables. For example, to compensate for the loss of some respondents with particular characteristics, the responses of others with the same or similar characteristics might be counted/included more than once.

reliability--when talking about tests, means "will the same person taking the test twice get the same score?" Can be checked by retest or by comparing scores on one half of the test with scores on the other half.

regression analysis--a means of estimating the joint relationships of several variables with a dependent variable. The regression analysis results in the best (linear additive) combination of the independent variables that predict a single dependent variable.

SAI--TALENT's Student Activities Inventory (personality scales; see Introduction)

SIB--TALENT's Student Information Blank (biographical data; see Introduction)

standard deviation--a measure of the degree of variability in a variable. It indicates the average amount of difference in a set of scores from the mean (average) of the scores. For example, if a set of scores ranged from 25 to 75 with a mean of 50, it would have a greater standard deviation than another set with a range of 40 to 60 and a mean of 50.

validation--determining how well a test measures what it is supposed to measure. For instance, a test might claim to measure math performance in American high school students; to validate the test it could be given to a large and representative sample of American high school students such as the TALENT participants.

A. ANNOTATED REFERENCES

1. Abrams, Doris L., et al. Estimates of the determinants of men's and women's economic success. Paper presented at meetings of American Educational Research Association, New York, April 3-8, 1977. (ED 138 513)

Data were obtained from a new sampling of men and women originally surveyed by Project TALENT in 1960. After eliminating some members of the basic sample, a complete data sample was obtained of 772 men and 398 women. Questionnaires were used to survey the participants. The effects of family background, academic ability, and educational attainment on men's and women's economic success were estimated. Results suggested that men attain occupational status in much the same way as women, except that men obtain greater returns from academic ability. Women were earning significantly less than equally qualified men. Women received somewhat greater economic returns from ability, education, and occupational status than did men; men benefited more than women from increasing work experience. (ERIC)

2. Altman, Stuart H. Present and future supply of registered nurses. U.S. Department of Health, Education, and Welfare, 1971. (ED 064 514) (81761)

Sponsors: Public Health Services, Division of Nursing, National Institutes of Health; The Urban Institute

Purpose: The Division of Nursing continually assesses and projects the supply of registered nurses across the nation. In 1967 the Division contracted with Brown University to prepare a comprehensive analysis of the impact of economic factors on the current nurse supply and the projected supply through the 1970s. Dr. Stuart Altman, the principal investigator, did an additional analysis of noneconomic factors influencing an individual's decisions, such as choice of a nursing career, type of educational program, and continued professional practice. For this additional analysis, he drew heavily on Project TALENT.

Data Used: The sample for the TALENT analysis consisted of females tested in 1960 as 11th graders who had responded to the 1-year and 5-year follow-ups. The variables were: (1960) information totals, interest inventory items, and Student Information Blank (SIB) items on high school jobs, family background, expected occupation and education, expected age at marriage, health, reasons for planning or not planning to go to college, job characteristics important to the individual; (follow-up) whether graduated from high school, post-high school education and how it was financed, job, salary, steps taken toward career plan, military service, marital status, race, religion, regrets.

Analyses: Project TALENT provided frequency and/or percentage distributions.

Findings: It was concluded that nurses were drawn primarily from middle-income families, that nurses were more likely to be drawn from the high-ability groups than were teachers, and that the largest dropout category from nursing was to the career of homemaker. Academic ability was a good predictor that a girl who wanted to be a nurse when in 11th grade would succeed in entering nursing; family income was not a barrier except for those with limited ability. Students enrolled in nurse training programs were more likely to complete the program than were students in teacher preparation programs; this was attributed to the commitment to preparation for a specific vocation required by nurse training programs as compared with teacher training, where the first two years consisted of a general liberal arts program.

3. Asher, J. William. Do driver training courses produce better drivers? An alternative hypothesis. Purdue University (mimeo). (T-36)

Purpose: to investigate the question, "Do high school students who take driver education courses differ from those who do not take driver education courses but who have the opportunity to do so, on variables that have been shown to be related to later automobile accidents and traffic violations?"

Data Used: Asher used a 1% random sample of TALENT 12th graders. The criterion variable was whether the student had taken driver education. Other variables included sex, information on academic subjects, interest and personality scores, score on the Preferences test which measured speed in decisionmaking, ability in mechanical reasoning, the TALENT composites for IQ and SES, and items on hobbies, sports participation, high school jobs, dating, studying, curriculum, courses, grades, driving, and amount of education planned.

Analyses: Students were grouped according to their answers to the driver education question. Those who answered "Yes" or "No, but it was available" were the ones analyzed for this report. Correlational analysis was performed.

Findings: Several of the information scores were positively related to electing driver education; so was IQ. Those of higher SES more often elected driver training. Starting to earn money at a younger age, dating less often, taking more foreign language courses, and expecting to go to a four-year college were positively correlated with electing driver training. None of the personality or interest scores were significantly related to electing driver training. The author concluded that those who elected driver training differed from those who elected not to take it on variables related to traffic accidents.

Related Publications

Vockell, Edward L., & Asher, J. William. Dating frequency among high school seniors. *Psychological Reports*, 1972, *31*, 381-382. (T-36)

4. Astin, Helen S. Personal and environmental factors in career decisions of young women. Final Report. Washington, D.C.: Bureau of Social Science Research, Inc., March 1970. (ED 038 731) (81759)

Sponsor: U.S. Office of Education, Bureau of Research.

Purpose: to explore the career development of women during the five-year period after high school, attempting to answer these questions: (1) What personal characteristics and environmental experiences affect young women's career decisions? (2) How stable is career choice between two points in time, and what are the personal and intellectual characteristics of women who persist in a career versus those of women who change their plans? (3) How well can career patterns be predicted five years after high school, and what measures are the best predictors of career outcomes?

Data Used: The sample for the analysis of patterns of stability and change in career choices consisted of female TALENT 1960 12th graders who had 1- and 5-year follow-up data. For the multivariate analyses, the numbers of sample members in each of the ten career groups studied were roughly equalized by using only 1/3 or [illegible] of the subjects in the career groups most frequently entered by women. Cases with missing data were eliminated. The variables used were (1960) information subscales in Literature, Art, Mathematics, Mechanics, and the Information Total; English Total, Reading Comprehension, Math Total, Mechanical Reasoning, Creativity, Abstract Reasoning; interest scales in Physical Science, Literary/Linguistic, Social Service, and Business/Managerial; personality scales of Sociability, Impulsiveness, Mature Personality; TALENT SES composite; SIB data on plans for undergraduate and graduate degree, high school grades, health, and career plan; and (follow-up) post-high school education, jobs, marital status, and number of children.

Analyses: High school career choice was classified into one of ten career groups. Multiple discriminant analysis was used to predict occupational choice five years after high school. To study occupational stability and change, t-ratios were used to evaluate mean differences in aptitudes and interests between those maintaining the same career plans and those changing plans over the five-year span.

Findings: Post-high school experiences were the best predictors of career choice at five years after high school. Educational attainment and marital-familial status best predicted whether women would choose to pursue careers in the sciences, professions and teaching, or to be housewives and office workers. High scholastic aptitude and high SES predicted entry into the sciences, professions, and teaching; interests and early career choices were better predictors of entry into the arts, health fields, and business. The occupations of teacher, office worker, and housewife gained in numbers of women over time, with those who changed careers tending to move into one of these three fields. Career changers tended to move to careers more in line with their academic capabilities as demonstrated in the 1960 TALENT testing.

5. Backman, Margaret Esther. Relationships of ethnicity, socioeconomic status, and sex to patterns of mental abilities. Ph.D. dissertation, Columbia University, 1970. (81751)

Purpose: to investigate the relationships of ethnicity, SES, and sex to patterns of mental abilities--i.e., the strengths and weaknesses in specific abilities of individuals or groups.

Data Used: The sample consisted of TALENT 12th graders who had 5-year data and sufficient 1960 data to construct MAP factor scores. The sample included all Negro, Jewish, and Oriental 5-year respondents, both regular and special, as well as all the special and a 5% random sample of the regular white non-Jewish respondents. Follow-up weights were used to compensate for nonrespondent bias. The variables included sex, age in 1960, race and religion (from the follow-up), TALENT SES composite, whether regular or special 5-year respondent, and the individual's MAP factor scores on Verbal Knowledges, English Language, Math, Visual Reasoning, Perceptual Speed and Accuracy, and Memory. SIB data on father's occupation, parents' education, region of United States, and size of city in which the individual resided were included.

Analyses: The sample was divided into groups by sex, ethnic group (Oriental, Negro, Jewish, and white non-Jewish), and SES. Age was controlled for. Since Jewish whites tended to have high SES and Negroes to have low SES, the sample used in the statistical analysis was restricted to the middle range of SES where the most overlap occurred. This was done so that there would be sufficient numbers of subjects from each ethnic/sex subgroup at each SES level studied. The middle SES subjects were divided into an upper and a lower group. As there was still a great disparity in the numbers of subjects in the different ethnic/sex/SES subgroups, replicated sampling was used to obtain equal cell frequencies. According to this procedure the subjects in each of the 16 subgroups were randomly divided into four "replicated" (sub)samples, yielding a total of 64 replicated samples. These replicated samples were analyzed using a fixed effects analysis of variance design in which ethnicity, SES, and sex were treated as between-subjects variables and the MAP ability factors were treated as a within-subjects variable.

Findings: Sex was related to patterns of abilities but not to level of abilities; ethnicity was related to both patterns and levels of abilities. As expected from previous research, females performed better on English, Perceptual Speed and Accuracy, and Memory, and males performed better on Verbal Knowledge, Math, and Visual Reasoning. The pattern of mental abilities of the Jewish-whites was distinguished by high mean scores on Verbal Knowledge and Math and low mean scores on Visual Reasoning and Memory. The pattern of mental abilities of the Orientals was characterized by a high mean score on Math. Negroes had higher mean scores on Perceptual Speed and Accuracy and Memory than on the other mental ability factors. There was little variation among the mean scores on the six mental ability factors for the non-Jewish whites; this was expected as the factor scores had been standardized on a sample that was predominantly non-Jewish white.

6. Bayer, Alan E. Life plans and marriage age: An application of path analysis. Journal of Marriage and the Family, August 1969, 551-558.

Purpose: to demonstrate the utility of the path analysis method in determining the relationships of four independent variables to age at marriage among a nationwide subsample of young people.

Data Used: A random sample of 4,000 married TALENT participants (2,000 males and 2,000 females) with complete information on the selected variables was drawn from the TALENT 1960 12th grade sample. The variables used were the TALENT aptitude composite score, SES composite, educational aspirations, and expected age at marriage. Age at first marriage was determined from the five-year follow-up study.

Analyses: Means and standard deviations were computed, by sex, for each of the five variables. Multiple regression and path analyses were performed.

Findings: For both sexes, the best single predictor of age of marriage was found to be the stated age at which the young person expected to marry, as reported in high school. The relatively independent effect of this single item was substantially more than that of any of the other predictor variables, including ability, SES, and educational plans.

7. Bayer, Alan E. Marriage plans and educational aspirations. American Journal of Sociology, 75(2), September 1969, 239-244.

Purpose: to test the hypothesis that there is a high correlation between the marital plans and educational aspirations of young people.

Data Used: A random subsample of 2,000 males and 2,000 females with complete information on selected variables was drawn from the TALENT 1960 12th grade sample. The variables were the TALENT aptitude composite score, SES composite, expected age at marriage, and educational aspirations. The criterion variable was a measure of educational aspiration based on the amount of education the participant expected to receive at the time he or she was enrolled in 12th grade.

Analyses: Means and standard deviations were computed, by sex, for each of the four variables. Multiple regression and path analyses were performed.

Findings: Aptitude, SES, and marital plans were each found to exert a strong independent influence on the educational aspirations of both male and female high school seniors. The direct effect of marital plans on educational aspirations was especially marked for girls. Nonetheless, the path analysis showed a large amount of unexplained variance and indicated that either (1) educational aspirations are largely unpredictable and highly fortuitous, or (2) additional variables need to be incorporated into the prediction system.

8. Bend, Emil. The impact of athletic participation on academic and career aspiration and achievement. Pittsburgh, Penn.: American Institutes for Research, 1967. (E-30, T-41)

Sponsor: National Football Foundation and Hall of Fame

Purpose: To supplement previous research studies on sports, which had been limited to small samples, with an exploratory analysis of Project TALENT data.

Data Used: The sample was males tested by Project TALENT in 1960 as 12th graders who responded to the five-year follow-up. No weighting was used to compensate for follow-up nonrespondent bias. The independent variables included athletic team membership, athletic awards, and the TALENT SES and general academic aptitude composites. The dependent variables included 1960 data on school size, region of the United States in which the school was located, SAI personality scales, selected Interest Inventory items, and selected SIB items on memberships, leadership, hobbies, studying, grades, awards, and post-high school expectations. Five-year follow-up data used included occupation (especially athletic occupations), salary, job satisfaction, occupational plans, military duty, marital status, and college attendance and degrees earned.

Analyses: The sample was divided into four groups based on level of athletic participation and achievement, and also divided into quartiles on the basis of SES and on the basis of academic aptitude. SES and academic aptitude were combined and the analyses were conducted using only the extreme high and low scorers in SES-academic aptitude and in athletics. TALENT provided tables showing means, standard deviations, frequencies (separate and cumulative), and percentages (separate and cumulative).

Findings: Differences were found in favor of athletes on almost all the major dimensions of achievement and aspirations that were investigated. Although athletes tended to come from higher socioeconomic backgrounds and have higher academic aptitude scores than nonathletes, these two factors did not explain all of the advantage athletes seemed to have over nonathletes. The tables comparing sample members from the lowest and highest SES/academic aptitude quartiles show that, at the lowest as well as at the highest SES/academic aptitude levels, the athletes had higher salary expectations and slightly higher salaries; more athletes belonged to and were leaders in clubs (including nonathletic clubs); more athletes expected to go to college, went to college, and obtained degrees. In educational expectations, college attendance, and degrees earned, however, both athletes and nonathletes from the highest SES/ aptitude quartile were far above both athletes and nonathletes from the lowest quartile.

9. **Bendick, Marc, Jr. Education as a three-sector industry. Chapter 5 in Weisbrod, Burton A. (Ed.), The voluntary nonprofit sector: An economic analysis. Lexington, Mass.: D. C. Heath, 1977. (The chapter summarizes portions of the author's Ph.D. dissertation, University of Wisconsin, 1975.) (95113)**

Purpose: To understand the division of labor among public schools, private for-profit schools, and private nonprofit schools and to explain differences among them on the basis of economic models of voter and consumer behavior. Differences in output of the three sectors--subjects offered, student bodies served, and quality of instruction--were a major focus.

Data Used: Both TALENT and non-TALENT data were used. The non-TALENT data was taken from a U.S. Office of Education nationwide survey of high school course enrollment in 1960-1962. For the TALENT data, the sample included all TALENT high schools except for 20 that had to be omitted because they didn't indicate whether they were public, private, or parochial. The variables came from the TALENT high schools' responses to items on the General School Characteristics Questionnaire and included class size, teacher credentials and salaries, per-pupil expenditures, availability of books and equipment, and extracurricular activities at the school.

Analyses: TALENT provided tabulations showing response distributions and raw and weighted means and standard deviations for three groups of schools--public, private, and parochial--and for the total group of TALENT schools used in the study.

Findings: The three-sector model tested in this study assumed that public schools and private nonprofit (e.g., church-related) schools would concentrate on training the average person for good citizenship, while private for-profit schools would serve individuals who wanted more advanced or specialized instruction or higher quality instruction. The private nonprofit schools would provide citizenship training above the median demand--i.e., to special subsectors of society.

TALENT data showed for-profit schools highest in most of a list of variables that were taken as measures of school quality, including per-pupil expenditures; teacher-pupil ratio; number of books in library; amount of curricular experimentation; percentage of full-time teachers with graduate degrees, teaching over half time in major field, or with graduate training in major field; percentage of male teachers; average homework hours expected; and variety of extracurricular activities. Public and parochial schools, by contrast, were most active in providing education for ethnic minorities, foreign language speakers, low-income persons, juvenile criminals, and high school dropouts. Parochial schools were found

to be more active than public schools in providing education to foreign language speakers (these students probably shared religious or ethnic ties with the group operating the school). These findings were taken to support the three-sector model of the services provided by schools.

10. Bergenn, Victor William. The relationship of adolescent test performance to subsequent psychiatric deviance. Ph.D. dissertation, Columbia University, 1972. (81752)

Purpose: To determine whether or not certain cognitive, interest, and temperament factors (as measured by tests given in high school) differentiated between a group of males who later became "psychiatric casualties" and a matched control group of males who did not.

Data Used: In this "follow-back" study, the New York State Department of Mental Hygiene provided demographic information on individuals who had been admitted to its participating institutions. Project TALENT provided data on members of this group who had been TALENT participants, as well as on a control group of classmates matched on grade and school. The sample included males who had been tested by TALENT as 9th, 10th, 11th, or 12th graders; females were not used due to problems in locating those who had a married name. Eight controls were drawn for each member of the hospitalized sample. Controls with missing data were eliminated, but missing data was estimated for the criterion group. The variables included high school grade cohort, all the interest inventory items, all the SIB items (except for the two essay questions), the 10 personality scores, the information test scores, the ability tests, the Preferences Test, and the interest scores.

Analyses: In order to reduce the number of variables, a new factor analysis was performed for this study on the test scores of the combined two groups. Previous TALENT factor analyses (Cureton, 1970; Cureton, 1968; Shaycoft, 1967; Lohnes, 1966) were not considered appropriate to the New York sample, whose achievement tended to be above the national average. The TALENT cognitive measures were reduced to 8 factors--Word Knowledge, Perceptual Speed and Accuracy, Visual Reasoning, Mathematics, Hunting-Fishing, Memory, Speed of Decision Making, and Color; the interest measures to 4 factors--Professional, Industrial, Commercial, and Outdoor; and the personality measures to 2 factors--Social Conformity and Impulse Control. The mean scores of the experimental and control groups were computed for each of the factors. A two-way analysis of variance was performed to investigate the influence of grade level and hospitalized/control status on the factor measurements.

Findings: One cognitive factor (Visual Reasoning) and two temperament factors (Social Conformity and Impulse Control) significantly differentiated the two groups. On each of these factors, the psychiatric casualty group was found to have scored lower than the control group. On the cognitive factor called Word Knowledge, there was significant interaction between grade level and psychiatric status. While the casualty groups in grades 9 and 10 tended to score lower than their control groups on Word Knowledge, those in grades 11 and 12 tended to score higher.

11. Bishop, John. The effect of public policies on the demand for higher education. Journal of Human Resources, XII(3), Summer 1977. (Reprints are available from Dr. Bishop at Institute for Research on Poverty, University of Wisconsin.) (88855)

Purpose: To determine the effect of several public policy instruments and aspects of economic environment on the decision to attend college. The policy instruments were tuition, admissions requirements, location of different kinds of colleges, and draft deferments. Aspects of the economic and social environment examined were social status of student's neighborhood, opportunity cost of the student's study time, and size of anticipated earnings payoff to college graduation.

Data Used: Both TALENT and non-TALENT data were used. The TALENT sample was males tested by TALENT in 1960 as 11th graders for whom there was either 1- or 5-year follow-up data. General School Characteristics Questionnaire data on their high schools were also used, as well as a set of 12th grade baseline data on each school. The baseline data included an average, for each school, of time spent by students working or looking for work, salary, and percentage expecting not to be in the military. Of the variables used in the study, some came from Project TALENT, some from other data sources, and some were constructed (see Analyses). TALENT 1960 variables used included sex, high school curriculum track, high school courses and grades, number of times changed schools, study habits and attitudes, personality scales, extracurricular activities, math and verbal ability scores, information total, interest scales, family background, awards, parents' financial status, plans for college, and TALENT composites for academic aptitude, curriculum-linked academic achievement, and socioeconomic status. Follow-up variables included high school graduation, work, income, military service, college attendance and grades, college attended, degrees earned or planned, source of college finances, race, religion, and marital status.

Analyses: Using a binomial logit model, the probability of attending college within two years of being tested by Project TALENT as an 11th grader was estimated, taking into account college availability, costs, and other factors that might affect the ability or desire to attend college. The model was fitted separately to data for 20 groups of TALENT 11th graders--four ability groups and five family income groups. Weighting was used to compensate for bias arising from differences between those who do and do not respond to mailed TALENT follow-up questionnaires. The variables included in the logit equation included college costs (total, tuition, difference between any and four-year college, earnings forfeited while studying), college selectivity, increase in income due to college training, academic aptitude, social status of neighborhood, family socioeconomic status, number of siblings, draft pressure, and frequency and recency of school changes. Of these variables, "academic aptitude," "family socioeconomic status," "number of siblings," and "frequency and recency of school changes" came from Project TALENT.

Several variables were constructed for this study. (1) The cheapest feasible college was, among the colleges for which a student was eligible, the one which it would cost him least to attend. This variable was constructed from both TALENT and non-TALENT data. Bishop provided AIR with information on costs and selectivity of colleges located near TALENT high schools, as well as information on other colleges. For each TALENT 11th grade follow-up respondent, AIR determined the cheapest college for which the respondent was eligible by ability, sex, religion, race, etc. (2) A cost-of-living index was developed for each state and for some of the major SMSAs from two non-TALENT studies on city workers' family budget. (3) The social status of neighborhood was indicated by median real family income for the three middle-income groups and by median years of education for the poverty and high-income strata. This variable seems to have been constructed from non-TALENT data. (4) An index of frequency and recency of school changes was constructed from the answers to the TALENT SIB questions, "How many times have you changed schools since starting first grade?" and "When was the last time you changed schools?"

Findings: Tuition, high admission standards, earnings that must be forfeited during study time, and costs of travel and room and board all had significant negative effects on college attendance. Cross-sectional measures of the expected payoff to college (i.e., increased earnings due to college attendance) had a negligible relationship with attendance. The highest elasticities of demand were found to occur in the low-income strata and lower-middle ability quartiles, suggesting that an efficient subsidy program should focus on these groups.

Related Publications

Bishop, John. The impact of public policy on the college attendance of women. Presentation prepared for meeting of Economics of Education ASSA, AEA session, New York City, December 28, 1977.

12. Black, Bruce B. Biographical data antecedents of ability change. Ph.D. thesis, Purdue University, 1969. (T-73)

Purpose: to extract and identify factors in biographical data reported by high school students on two occasions, one during their freshman year and one during their senior year, and use the resulting factor structure to predict ability changes across the four-year period.

Data Used: The sample consisted of persons tested by Project TALENT in 1960 as 9th graders and retested in 1963 as 12th graders who had complete records for both administrations of the Abstract Reasoning Test and who had been given both the 1960 and 1963 forms of the SIB. The variables were the subjects' 1960 and 1963 scores on the Abstract Reasoning Test (taken as a measure of change in mental ability), and their scores on all items in the 1960 and 1963 forms of the SIB.

Analyses: The (raw) difference between each subject's 1960 and 1963 Abstract Reasoning scores ("gain score") was taken as the criterion measure of growth in mental ability. Mean score differences on Abstract Reasoning for males and females were tested for significance. Analysis of variance was used to establish homogeneity within sex among those who had taken the different retest batteries, and then all subjects were pooled by sex. Within each sex group three subgroups were randomly chosen, one for validation and two for cross-validation of the SIB items against gain in Abstract Reasoning score. SIB items that correlated sufficiently with Abstract Reasoning gain were retained for factor analysis. Ten female and 11 male factors were extracted and labeled by the author as follows: (male) Occupational Expectation, Educational Finances, Business and Work Attitudes, Health and Independence, Family Background, Reading Habits, Income Expectation, Action Decisions, Maternal-Home Influence, Academic Enthusiasm, and Paternal Influence; (female) Healthy Self, Academic Record, Educational Finances, First Date, Social Participant, Noncollege Goals, Math-Science Interest, Family Background, Attitude Toward School and Work, and Home Environment. Multiple regression against Abstract Reasoning gain was attempted with both the factor scores and the valid SIB items.

Findings: Both males and females had improved their Abstract Reasoning scores from 9th to 12th grade. The valid SIB items proved better predictors of change in Abstract Reasoning score than did the factor scores.

13. Bond, Richard A. Early predictors of alcohol abuse: A study of the relationships between interests, values, and personality variables from the 1960 TALENT data base and alcohol abuse in later life. Palo Alto, California: American Institutes for Research, 1977.

This report describes a study of relationships between early attitudes and personality traits, as shown by 1960 TALENT data, and later alcohol abuse as shown by arrest records of the Knox County, Tennessee police department. TALENT's Knox County saturation sample was used in the study.

14. Booms, Bernard H. Empirical estimates of secondary education production functions. Ph.D. dissertation, University of Pittsburgh, 1968. (Unnumbered TALENT Data Bank study)

Purpose: to identify factors affecting high schools' educational impact on students and measure the relative impact of each factor.

Data Used: Most of the data came from Project TALENT, supplemented by data from a U.S. Office of Education project to compile a National Inventory of School Facilities and Personnel. The sample included 9th and 12th graders tested in 1960. The variables included school means on Social Studies Information (taken as the measure of school output quality) and data from the school questionnaires (taken as input measures) including items about teachers, principal, school facilities, class size, homework assigned, curricula, courses offered, extracurricular activities available, racial composition of school, community SES, and rates of dropout, absenteeism, and college enrollment.

Analyses: Cross-sectional (1960) data for the 9th and 12th grade cohorts was treated as if it were longitudinal data for one grade cohort. Single-equation, least-squares multiple regression was the method used to estimate the structural relationship between educational output and the hypothesized input factors. Both additive and multiplicative multiple-regression models tried.

Findings: Variables that were related to student scores on Social Studies Information included (1) student's previous educational attainment, (2) number of teachers with an M.A., (3) number of courses available, (4) school facilities, and (5) students' SES background.

15. Bredemeier, Harry C. The differential effectiveness of high schools with selected characteristics in producing cognitive growth in different kinds of schools. Final Report. Office of Education, Bureau of Research, June 1967. (ED 014 771) (T-33)

Sponsor: The study was supported by a grant from the U.S. Department of Health, Education, and Welfare to the Urban Studies Center at Rutgers University.

Purpose: to determine effects of high school characteristics, including teachers, student body, and community economic investments in schools, on the cognitive achievement of students as related to the students' previously developed abilities, goals, personality, and family background.

Data Used: Data came from Project TALENT and from James Coleman's Equality of Educational Opportunity study. Some of the TALENT data came from previously published reports and some from a special analysis performed for this study. For the special analysis, the sample consisted of persons tested by TALENT in 1960 as 9th graders and retested in 1963 as 12th graders. The dependent variable was the TALENT English Total score, which was taken as a measure of verbal ability comparable to that used in the Coleman study. Other variables included 1960 and 1963 information scores on Literature and Social Studies and Introductory High School Math, and 1960 scores on Reading Comprehension, Abstract Reasoning, five personality items (Impulsiveness, Calmness, Leadership, Mature Personality, and Self-Confidence), as well as SIB items on goals, family background, and acceptance of student role. Data from the General School Characteristics Questionnaire (GSC) on teachers and school expenditures was also used.

Analyses: Several indexes were created for this study from TALENT variables. Indexes for individuals included Growth Scores (individual's 1963 score minus 1960 score on the information tests in literature, social studies, and math); Acceptance of Student Role (constructed from SIB items on studying); and Family Background Index (constructed from SIB items on family finances, books and magazines in home, and parents' occupation and education). Two school indexes were also created--Teacher Quality Index and Academic Investments Index--as the sum of points assigned to GSC responses. The student's Growth Scores were correlated with his scores on the personality variable, the Family Background Index, the two ability tests, and the Index of Acceptance of Student Role, and with his school's scores on the Teacher Quality Index and Academic Investments Index (a measure of community investment in schools). Schools were divided into five levels on Teacher Quality and three levels on Academic Investments and correlations were found between the students' Growth Scores and their scores on the other individual variables within each category of schools.

Findings: Little relationship was found between the differential achievement of secondary school students on the tests of literature and social science information and mathematics and any measured characteristics of the schools they attended or the personal characteristics or family backgrounds of the students. The author suggested that the lack of relationship was due to characteristics being measured in isolation and that research needed to be done on the differential responses of various kinds of students to different kinds of teacher-student transactions.

16. Brim, Orville G., Jr., Goslin, David A., Glass, David C., & Goldberg, Isadore. The use of standardized ability tests in American secondary schools and their impact on students, teachers, and administrators. New York: Russell Sage Foundation, 1964. (D-51)

Sponsors: Russell Sage Foundation and Carnegie Corporation of New York funded all aspects of the study except the sampling, administration, and provision of the final computer tape, which were performed by Project TALENT staff and funded by TALENT's regular sponsor, U.S. Office of Education.

Purpose: This publication, which describes one of a series of studies directed by Russell Sage Foundation on social consequences of standardized intelligence, aptitude, and achievement testing, was intended as a technical report, presenting instruments, field methods, and attitude frequencies. Areas covered are (1) how high schools use standardized ability tests, (2) impact of the tests on the individuals tested, (2) impact of testing programs on the schools, and (4) high school students' ideas about intelligence and intellectual achievement and about ability testing.

Data Used: The *sample* consisted of 80 public high schools, 10 private schools, and 10 parochial schools. For the public high schools the sample was selected to be nationally representative; a quota system based on the Project TALENT Taxonomy of Public Senior High Schools was used to achieve this goal. The sample was stratified by U.S. Office of Education region, community size, size of the senior class at the high school, and socioeconomic level of neighborhood. Private and parochial schools were selected to represent the "elite" student; the schools chosen were those judged to be outstanding in academic requirements, reputation, and performance. Questionnaires developed for this study by Russell Sage Foundation were administered by the 100 participating schools to students, teachers, and counselors. The reading comprehension test used by Project TALENT for the 1960 testing was administered and the students' scores on it were standardized to the results for the entire TALENT sample.

Background data on relation between extent of standardized testing, reporting of test scores, and a number of school variables came from a special analysis of data on the 100 participating schools collected by Project TALENT in 1960. The *variables* came from the TALENT General School Characteristics Questionnaire and Guidance Program Questionnaire. The extent of testing was related to several school variables including per-pupil expenditure, dropout rate, percentage going to college, class size, school policy in reporting test results to parents, curriculum tracking, availability of special classes, and use of test results in guidance.

Analyses: For the special analysis, several indexes were constructed from items in the General School Characteristics Questionnaire and Guidance Program Questionnaire. They included indexes of extent of testing, homogeneous grouping by curriculum track, and purposes of testing. Tables were prepared showing the relation of these indexes to several of the TALENT school variables.

Findings: Among the findings based on this special analysis of TALENT data were that the extent of testing in high schools was positively correlated with per-pupil expenditures, percentage of seniors entering college, length of time school had had a guidance program, size of classes, extent of reporting scores to parents, ability tracking, and provision of special classes for fast and slow learners.

Related Publications

Brim, Orville G., Jr.; Neulinger, John; & Glass, David C. *Experiences and attitudes of American adults concerning standardized intelligence tests*. New York: Russell Sage Foundation, 1965.

Brim, Orville G., Jr.; Glass, David C.; Neulinger, John: & Firestone, Ira J. *American beliefs and attitudes about intelligence*. New York: Russell Sage Foundation, 1969.

17. **Brown, Marsha Diane. Sex differences in factors affecting educational outcomes. Qualifying paper for doctoral degree, February 1974. (81755, 95104)**

Purpose: To determine how well background variables could explain the finding of previous research that women expect to obtain, and actually obtain, less postsecondary education than men.

Data Used: Data came from the Current Population Survey, from Jencks's Inequality (which also used TALENT data), and from an analysis of Project TALENT data conducted for this paper. The TALENT sample used in the paper consisted of persons tested by Project TALENT in 1960 as 9th graders who had complete 1960 data on achievement and SES and 5-year follow-up data on educational attainment. One-year follow-up data was also used. For the final analyses, the sample was limited to those with complete data on all background variables. In most of the regression analyses the sample was not weighted to correct for nonresponse bias. The 9th graders (a subsample of about 3% of all 9th graders tested by Project TALENT) came from 70 of the 118 TALENT retest schools. All vocational schools, schools with student bodies less than 75% white, and very small schools with less than five males or less than five females were eliminated from the sample. The variables included the TALENT SES composite; SIB data on family size, high school grades, high school curriculum track, and educational expectations; scores on Vocabulary, Reading Comprehension, Arithmetic Reasoning, and Social Studies Information; and 1- and 5-year follow-up data on post-high school education.

Analyses: Several "composite variables" were created including General Achievement (constructed from scores on verbal and math ability, reading comprehension, and social studies information) and Education Projected (computed from 5-year follow-up data on amount of education already obtained and current enrollment status). Educational plans and attainment were compared for males and females using crosstabulations. Multiple regression analysis was used to test whether the linear effects of the six background variables on educational expectation and attainment differed for males and females and to test for different school effects on males and females.

Findings: In high school only 3/4 as many girls as boys planned to obtain a B.A., and the gap increased over time so that at 5 years after high school, only 2/3 as many girls as boys were still enrolled in a four-year college or had graduated with a B.A. degree. By one year after high school, almost as many girls as boys had some post-high school education, but more of the girls were in noncollege programs. For high-achieving students, the college completion rates for girls were similar to those for boys, but for low-achieving students the rates of college completion were considerably lower for girls than for boys. Effects of the background factors on educational outcomes were about the same for girls and boys, and variation among schools did not have much effect on student educational outcomes.

18. Burket, George R., & Flanagan, John C. Project TALENT: Selected pupil and school characteristics in relation to percentage of Negroes in school enrollment. Project TALENT, 1963.

Consisting mainly of tables, this report presents the findings of a statistical study which examined the differences and similarities among 733 Project TALENT senior high schools with varying proportions of Negro enrollment. The factors studied were educational outcomes, school practices, student body characteristics, and school board policies. Findings are based on responses to 17 questions from the General School Characteristics Questionnaire and two items from the Guidance Program Questionnaire. Data on pupil characteristics show that there is a tendency for mean Project TALENT test scores to decrease as the Negro enrollment percentage increases. Test means are about as high for schools enrolling 1-9% percent Negroes as for schools with no Negroes. Most test means show small differences between schools in low- and medium-quality housing areas. The higher the Negro enrollment, the smaller the percentage of students entering college, but college entrance is positively related to size of school and community and housing quality regardless of the extent of Negro enrollment. Dropout rates, incidence of pupils with a Spanish or Latin American background, and absenteeism are higher in schools with greater Negro enrollment. (ERIC)

19. Burkhead, Jesse, Fox, Thomas G., & Holland, John W. *Input and output in large-city high schools*. Syracuse, New York: Syracuse University Press, 1967. (Part of Education in Large Cities Series) (T-6)

Sponsor: Carnegie Corporation of New York

Purpose: This monograph, one of a series analyzing policies and policymaking in large-city educational systems, focused on resource allocation in school systems and its influence, as well as the influence of other factors, on school effectiveness.

Data Used: TALENT data were used in Chapter V to see if the analysis model used for the large-city high schools could also be applied to small-community high schools. The *sample* consisted of 206 TALENT high schools, the same ones used by J. Alan Thomas in his study (D-27) reported in *Administrative Rationality and the Productivity of School Systems* (A123 in this bibliography). The sample included public high schools in communities that had 2,500-25,000 population and only one public high school. The *variables* were selected from those Thomas had used for his study. School means on 12th grade reading scores (from the TALENT Reading Comprehension test), the dropout rate, and percentage going on to college (from the General School Characteristics Questionnaire) were the output measures. The input variables were median family income, school building age, number of books in library, teacher experience, class size, beginning teacher salary, per-pupil expenditures, and 12th grade enrollment. All these came from the GSC except median family income, which was derived from Census data added by Thomas to the data set.

Analyses: The same analyses performed on the large-city data were performed on the TALENT small-community school data. The statistical procedure was a form of stepwise regression. The eight independent variables were those listed above as "input variables," except that books in library was weighted for the size of the 12th grade class. The four dependent variables were school mean on 12th grade reading; dropout rate; college attendance rate; and progress in reading from 10th to 12th grade, constructed by regressing 12th grade reading mean on 10th grade reading mean for each school. Community socioeconomic data (variables coming from Census data except for an index of housing quality that came from the GSC) was correlated with the output variables.

Findings: As with the large-city schools, median community family income was the factor most related to school effectiveness (measured by school means on 12th grade reading scores). For the small communities, school building age, teacher experience, and beginning teacher salaries were also related to school effectiveness. The findings did not indicate conclusively whether the same model used for the large-city schools could be applied to the small-community schools.

20. Burnim, M. L. Investments in college education for black males. Proceedings of the American Statistical Association, Business and Economic Statistics Section, 1977. (95125)

Purpose: The issue of concern was whether the 107 traditionally black colleges and universities in the United States should be closed in the interest of economic efficiency. The project attempted to determine whether the individual and society received more return on their investment when black men attended black or nonblack colleges.

Data Used: The sample consisted of 451 black males, tested by TALENT in 1960 as 12th, 11th, or 10th graders, who graduated from high school and responded to the 11-year follow-up. Variables from Project TALENT included the 1960 SES and academic aptitude composites and 11-year follow-up data on year graduated from high school, level of education attained, noncollege post-high school education, college attended, and residence. Zip codes were used to determine whether the individuals lived in the South or some other region of the country and to control for geographic cost-of-living. Non-TALENT information was used to determine size of city in which workplace was located.

Analyses: Multiple regression was used to estimate earnings profiles, which were then used, along with cost data, to calculate internal rates of return over the individual's working life to investment in a bachelor's degree. To check on the effect of college quality on the earnings of black males, earnings were regressed on schooling, marital status, and Gourman rating (a non-TALENT rating of college quality). Returns to the individual and society from investment in college education were evaluated using the internal rate of return method, with predicted lifetime earnings as the criterion for return on the investment. Costs to society were measured by earnings foregone by the individual to study, faculty salaries, expenses for physical plant maintenance, general administration, libraries, and depreciation on buildings and equipment, and tuition and fees. Returns to society were measured by predicted earnings, including taxes that would be paid by the individual, as a lower bound estimate. Expected rates of return were computed by adding highest degree expected, so that the expected rate of return would be higher if the individual went on to a graduate degree.

Findings: Rates of return to the individual and to society were higher for black men graduating from nonblack colleges, when it was assumed that the individual would stop with a bachelor's degree. However, when highest degree expected was added in, the expected rate of return was greater for black men enrolled in black colleges. The nonschooling variables that most significantly affected earnings were aptitude, size of city worked in, marital status, and residence in the South or another locality. The author cautioned that the predicted earnings had fairly large forecast error variances and that this might restrict the generalizability of the results.

Related Publications

Burnim, Mickey L. Comparative rates of return to black college graduates: The black versus the nonblack schools. Ph.D. dissertation, University of Wisconsin-Madison, 1977.

21. Card, Josefina J. Consequences of adolescent childbearing for the young parents' future personal and professional life. Final Report. Palo Alto, California: American Institutes for Research, 1977. (59700)

Sponsor: National Institute of Child Health and Human Development

Purpose: Recognizing that the consequences of adolescent childbearing had not been systematically documented for the nation as a whole, NICHHD funded ten studies using extant data bases, of which this study was one.

Data Used: A subsample of all TALENT 9th and 12th graders who had 5- and/or 11-year follow-up data was used. This subsample consisted of all blacks, all whites who gave birth at age 18 or younger, and a sample of whites who were not adolescent childbearers. Follow-up weights were used to make the subsample representative of the larger sample.

The independent variable of interest, adolescent childbearing, was measured by age at birth of first child. The dependent variables of interest were the educational, occupational, and personal consequences of adolescent childbearing. There were two types of moderator variables: antecedent, which occurred before the event of interest (adolescent childbearing), and behavioral-event, which could occur after the event of interest. The antecedent moderator variables came from the 1960 battery and included sex, race, size of community in which the student grew up, SES, cognitive scores and high school grades, personality characteristics, interests, and educational expectations. The behavioral-event moderator variables came from the follow-ups and included high school graduation, post-high school education, job, income, job satisfaction, marital status, number of times married, family size (actual, ideal, expected), and decisions regretted. While the behavioral-event variables would not have affected adolescent childbearing, it was thought that they might have effects on its later consequences.

Analyses: Those who became parents before their 20th birthday were classified as adolescent childbearers; all others were the comparison group. These two groups were further subdivided by age. To determine antecedents of adolescent childbearing, the 1960 data for the adolescent childbearer and comparison groups were compared, separately by sex, using the chi square and the t-statistic. Correlations between age at birth of first child and the antecedent variables were computed. To find out whether post-high school experiences differed between the adolescent childbearer and comparison groups, their 1-, 5-, and 11-year follow-up data were compared using chi-square and t-statistic, and correlations were computed between age at birth of first child and the outcome variables. To check whether the outcome differences actually resulted from adolescent childbearing, multiple classification analyses were run to see whether the obtained bivariate relationships between adolescent childbearing and the outcome variables held up when the effects of common antecedents were partialed out. Analyses of variance were run with adolescent childbearing and its antecedents as independent variables and representative outcome variables as dependent variables, and the size of the main effect due to adolescent childbearing was compared to the main effect due to the antecedents. An attempt was made to assess the extent to which obtained differences in the outcome profiles of the adolescent childbearers vs. comparison groups varied antecedent or behavioral-event moderator variables.

Findings: Many differences between adolescent childbearers and their classmates were found. The differences existed before the birth of the child, grew larger because of this birth, and remained substantial through the last time period studies (when respondents were about 29 years old). The differences were much more pronounced among females than among males. Adolescent childbearers tended to come from lower than average socioeconomic backgrounds and to have lower cognitive scores, lower grades, fewer academic interests, and lower educational expectations than their classmates. Female adolescent childbearers were also different on personality measures, being more impulsive, less mature, calm, cultured, vigorous, or leadership oriented. Both fathers and mothers often dropped out of school to care for the child or take a job to support it. Female adolescent childbearers had lower incomes and held jobs of lower prestige than their classmates. Adolescent marriages had high separation and divorce rates. Adolescent childbearers had high fertility rates. They expressed more regrets than their classmates about the age at which they married and about their failure to achieve as much schooling as they wanted.

Related Publications

Card, Josefina J., & Wise, Lauress L. Teenage mothers and teenage fathers: The impact of early childbearing on the parents' personal and professional lives. Family Planning Perspectives, 1978, 10(4), 199-205.

Card, Josefina J. Counseling teenage couples on the wisdom of having versus postponing children. Medical Aspects of Human Sexuality, forthcoming.

Card, Josefina J., Wise, Lauress L., & Miller, Warren B. Age at first birth and female achievement. Submitted for publication, 1978.

MacDonald, Charlotte. The stunted world of teen parents. Human Behavior, 8(1), January 1979, 52-55.

22. Carlson, Mable Dosia. Pre-ministerial students: Selected characteristics differentiating stable from migrating candidates. Ph.D. thesis, University of Pittsburgh, 1967. (T-42)

Sponsors: Danforth Foundation; Ministry Studies Board

Purpose: to determine characteristics of students who choose the Protestant ministry as a career and differences between those who stay with that choice or change to another occupational plan.

Data Used: The sample consisted of white Protestant males who took the TALENT tests as 12th graders in 1960, who responded to the five-year follow-up, and who indicated vocational interest in the ministry or 15 professional fields such as law, high school teaching, medicine, and social work. Variables were provided from the 1960 battery and the 1965 follow-up relating to students' academic pursuits (TALENT achievement and information test results, study habits, high school and college grades, involvement in higher education, selection of college major and minor); interests and nonacademic activities (scores on TALENT interest inventory, degree of involvement in organizations, hobbies, summer and part-time jobs, and leisure reading); home environment (occupation of parents, educational level of parents, parental activity in church and community organizations, and family socioeconomic level); and future plans (persons selected for discussing future plans, expected income, and degree of importance attached to various aspects of future jobs).

Analyses: Analysis of variance and chi-square analysis were used to determine if significant differences existed (1) between students who remained stable in their vocational preference for the ministry, those who migrated out of this vocational preference, and those who migrated in; (2) between those students who had expressed a vocational preference for the clergy and those who had never expressed such a preference; and (3) between those students who remained stable in their vocational preference and those who did not.

Findings: In regard to academic pursuits, Clergy Stable were superior within clergy groups, and stable students in general were superior to migrating students. Students migrating out of the ministry majored in religion less than did other clergy students. Examination of interests and nonacademic activities revealed broadest interests within clergy groups associated with Clergy Migrating In; contrasting clergy with nonclergy showed the former involved primarily in religious concerns while the latter reported involvement in scientific, technical, and athletic concerns; migrators showed interest in many fields, while the stable seemed limited to church activities. Clergy Stable tended to discuss plans with clergymen more than did others within the clergy groups; Clergy Stable were also more definite in occupational choice and conversely explored few other vocations; compared to preseminary students, nonclergy subjects wanted to have more income, job security, decisionmaking freedom, and promotional opportunities.

23. Clarke, M. M., & Clarke, G. G. Environmental variables affecting child development. Oak Ridge National Laboratory, Oak Ridge, Tennessee, June 1971.

Sponsors: U.S. Department of Housing and Urban Development; U.S. Atomic Energy Commission

Purpose: This report, one of a series stemming from the 1969 Summer Study of Urban Decentralization at Oak Ridge National Laboratory, focused on the relationship in children between three handicaps--high school dropout, overcrowded home, abnormal height-weight ratio--and several sociopsychological measures.

Data Used: The sample consisted of 3,742 males tested by TALENT in 1960 as 8th and 9th graders. These students were part of the "saturation sample" in which all 8th through 12th graders in one Southern county were given the TALENT battery. The variables came from the 1960 battery and the 9th grade 1-year follow-up and included SIB questions on ability to concentrate in school, age when started first grade, age at April 1960, days absent from school, hours of study each week, father's occupation, number of living children in family, rooms in home, people in home, height, weight, how often sick in bed, how many hours sleep each night, amount of education expected; the TALENT IQ composite; high school dropout; and school type (probably from the GSC). Race was inferred from data on area of residence.

Analyses: Apparently the question on emotional problems and the mobility composite were constructed from TALENT data; there is also an academic achievement composite score, which may have been a TALENT composite or may have been constructed for this study. Contingency tables were used to relate handicaps to sociopsychological variables. Area of residence and, by inference, race were controlled in all analyses, and occupation of male head of household was controlled in the dropout analysis.

Findings: High school dropout: White high school dropouts, as compared with white nondropouts, had had more previous difficulty concentrating in school, had been absent from school more, were more mobile, had more siblings, expected less education, slept less, were more emotionally disturbed, had lower IQs and lower school grades, and were more likely to come from blue-collar homes. The only areas that differentiated black dropouts from black nondropouts were the dropouts' greater mobility, greater incidence of emotional disturbance, and lower IQs. Overcrowded home: Both whites and blacks from overcrowded homes dropped out of high school more often and had lower IQs. Hours of sleep, academic achievement, days out sick, and head of household's occupation were related to overcrowding for whites but not for blacks. Height-weight ratio:

Normality of body build was related to occupation of head of household in all residence areas except central city. Blacks and whites at the middle IQ levels were most likely to have normal body build; as IQ rose the percentage of children with normal body build peaked and then declined. For whites, a similar relationship was found between body build and academic achievement.

24. Claudy, John G. Occupational outcomes: Who, what, and why? Paper presented at meetings of American Psychological Association, Miami, September 3, 1970.

Purpose: to answer the following questions: What sorts of persons choose various occupations? What are the distributions of these career choices? How stable are occupational choices and which are the most stable? Do persons whose career plans are stable differ from those whose plans change? Can information collected while a person is in high school be used to predict career stability?

Data Used: The sample consisted of 1960 12th and 11th graders with 5-year data. 1960 and nonrespondent weights were used. The variables included 1960 and five-year career choice; high school curriculum; grade at which high school career choice was made, certainty of job or career choice, number of jobs considered, and number of times discussed occupations with high school counselor in 1960; TALENT general academic aptitude composite; and amount of education completed at five years after high school.

Analyses: Five-year occupational choice was categorized into one of the 36 occupations listed as alternatives in the 1960 career choice question. Five-year choice was checked against other items in the questionnaire, such as amount of education obtained and planned, and infeasible choices were classified as "undecided." Tables were compiled showing numbers of percentages of persons in each occupational category, their general academic aptitude, amount of education they obtained, and occupational stability as a function of high school curriculum, number of times jobs were discussed with counselor, grade at which job choice was made, certainty of job choice, number of jobs considered, and amount of education completed.

Findings: Males moved away from science and into business careers; females moved toward teaching or homemaking. Overall career stability rates were quite low, and high school curriculum, discussing jobs with a high school counselor, grade at which career was chosen, and certainty of job choice had little or no effect on career stability. Five years after high school persons tended to plan occupations more in keeping with their abilities than they did in high school.

25. Claudy, John G., & Richards, James M., Jr. Psychological and social factors in fertility in the early years of marriage: An exploratory longitudinal study. Paper presented at the annual convention of the American Psychological Association, Washington, D.C., September 1971.

Purpose: to describe early results of a study of factors that might influence such variables as the development of ideal or desired family size preferences and, after marriage, the onset of childbearing and the spacing of children.

Data Used: The sample consisted of females who had been 12th graders in 1960 and who indicated at the 5-year follow-up that they were or had been married. 1960 and nonrespondent weights were used. The dependent variables were age at which the respondent married, whether the respondent had children, and the actual number of children. Thirty-four independent variables were selected from 1960 data on background, cognitive, and personality characteristics, activities and expectations in 1960, and college attendance (or nonattendance) at the 5-year follow-up.

Analyses: Correlation matrices were computed between the three dependent variables and the 34 independent variables using a missing-data program.

Findings: Early findings tended to support generally held ideas about the factors that influence fertility in the early years of marriages. Girls who married early and had more children by five years after high school tended to (1) be less intelligent; (2) come from lower SES homes; (3) date and go steady more often; (4) have parents with lower levels of education; and (5) expect to marry earlier and obtain less education than those who married later. Overall, the correlation coefficients were low, suggesting the inadequacy of utilizing psychological and social factors for understanding what determines a girl's age at marriage as well as the size of her family.

26. Claudy, John G. Five year stability of Holland occupational types. Paper presented at the meetings of the American Educational Research Association, New Orleans, February 27, 1973.

Purpose: to examine occupational choice range and stability rates for a large sample, using the six Holland occupational categories.

Data Used: The sample consisted of 1960 12th graders with five-year data. Regular 1960 and special nonrespondent weights were used. The variables were 1960 and five-year career plan.

Analyses: The 1960 and five-year occupational choices were classified into the six Holland categories. Percentages in each category at 1960 and five years after high school were found.

Findings: Only 18% of the males and 26% of the females chose the same occupation five years after high school as in 1960. 34% of the males and 47% of the females chose a career in the same Holland occupational category in 1965 as in 1960. Males tended to move out of science careers and into skilled trades, technical, and business occupations.

27. Claudy, John G. Project TALENT and SABER VOLUNTEER: Data correlations/research. Final Report. Palo Alto, Calif.: American Institutes for Research, 1973. (34300)

Sponsor: Office of Scientific Research, U.S. Air Force

Purpose: The United States abolished the draft in 1973. While the Air Force had not been assigned any draftees, previous research had indicated that a significant proportion of those joining the Air Force were "reluctant volunteers" who joined to avoid being drafted into the Army or Marine Corps. This study aimed to determine the salary level necessary to attract qualified individuals to the Air Force.

Data Used: The sample consisted of 1960 12th graders who indicated on the 11-year follow-up that they had a full-time job and who answered the 11-year question about salary. The variables were job at 11-year follow-up, salary, race, prior military service from 1- and 5-year follow-up, and aptitude in terms of the five Armed Forces Qualifying Test (AFQT) categories. The AFQT aptitude scores for Project TALENT participants came from a 1962 AIR study for the Air Force, in which several Project Talent tests were combined to form a composite test which was then equated with the AFQT.

Analyses: Both unweighted data (actual number of 11-year mail and special follow-up respondents) and weighted data (total weighted number of persons represented by the 11-year respondents, using the 11-year follow-up weights) were used for the study. The sample was subdivided by sex, race (white/ other/unknown), prior military service, and aptitude in terms of the five AFQT categories, and by 11-year job (63 job categories), and undergraduate college major from 11-year follow-up. The data were tabulated according to all these categories.

Findings: Men earned more than women at every AFQT aptitude category. Men with prior military service earned less than men without military service. Male military officers earned more than the average college graduate, but enlisted men earned less than the average of all men. It was recommended that military pay scales for enlisted men be raised to keep pace with civilian salaries. It was suggested that the reason men with prior military service earned less than those without was that time was lost in the military learning skills that could not be used in civilian jobs.

28. **Claudy, John G., Gross, David E., & Strause, Rebecca D. Two population studies: I. Family size, birth order, and characteristics of young adults. II. A study of married couples in Knox County, Tennessee. Final Report. Palo Alto, California: American Institutes for Research, 1974. (41900)**

Sponsor: Center for Population Research, NICHD

Purpose: The first study was concerned with the consequences of being raised in families with different numbers of siblings and of being born in different ordinal birth positions within the family. The second study attempted to discover personal characteristics that influenced choice of a marriage partner. The availability of Project TALENT data collected before most of the couples had met or developed marriage plans made it possible to study their characteristics without the chance that they were influencing each other's personality.

Data Used: For the first study, there were two samples--one consisting of all 1960 12th graders, and one consisting of all 1960 12th graders with 11-year follow-up data. The two samples were studied in two separate phases of the project, one including only 1960 variables, and the other concentrating on 11-year follow-up variables. For the second study, the sample consisted of all married couples in Knox County, Tennessee who had been members of Project TALENT's Knox County saturation sample. 1,339 couples were found in a 1974 search of Knox County marriage records. Only 1960 Project TALENT variables were used.

Analyses: For Phase I of the first study, the independent variables--family size and birth order--were related to a representative subset of the other 1960 variables through correlation and crosstabulation. For Phase II of the first study, family size and birth order were related to a number of the 11-year follow-up questions about post-high school education, occupation, and marriage and family status, again through correlation and crosstabulation. For the second study, the TALENT 1960 data for each spouse located was matched with the corresponding data for the other spouse. For those variables where the mean increased across grades (work history, information total, etc.), results were standardized by grade by connecting them to T scores with a mean of 50 and a standard deviation of 10. To determine the degree to which married couples had similar or opposite characteristics, Pearson product moment correlations, crosstabulations, and chi squares were obtained on a variety of variables including aptitude measures, interest inventories, personality inventories, and educational and marital plans.

Findings: For the first study, family size and the cognitive variables were negatively correlated when the effects of birth

order and SES were partialed out; and birth order and the cognitive variables were negatively correlated when the effects of family size and SES were removed. Only children scored lower on the cognitive measures than children from 2-or 3-child families. Those from larger families and later born individuals tended to earn less, have jobs that didn't fit their long range goals, be more interested in the extrinsic as opposed to the intrinsic aspects of their roles, receive less post-high school education, marry younger, have more children, and be less well-informed and politically involved. In the second study, the greatest similarities between marriage partners were found in the areas of SES, intelligence, and educational goals. Almost no meaningful relationships were found in the areas of personality or occupational interests; it was suggested that this was due to inadequacy of the TALENT measures.

29. Cole, Samuel Eugene. An assessment of mathematical abilities of secondary students in selected schools in Puerto Rico. Ph.D. dissertation, University of Nebraska, 1970.

The author did not use data collected by Project TALENT but merely received permission to translate and administer Project TALENT tests. The purpose of the study was to assess the success of "new math" programs in Puerto Rico using the same procedures as had been used in the National Longitudinal Study of Mathematical Abilities for assessing the success of "new math" programs in the continental United States. Project TALENT granted permission to use a Spanish translation of the National Longitudinal Study of Mathematical Ability test batteries, which included material from the Project TALENT battery.

30. The College Placement Council, Inc., Research Information Center. The college graduate: His early employment and job satisfaction. (Authors: Earl B. French and Robert F. Cook) College Placement Council, 1969. (T-47)

Sponsors: The project was supported by the CPC Foundation which, in turn, received its major contributions from the Alcoa Foundation, College Placement Council, Eastern College Personnel Officers, General Electric Foundation, Middle Atlantic Placement Association, Midwest College Placement Association, Southern College Placement Association, and University Career Planning Association. Additional financial assistance was provided by Lehigh University's Center for Business Economics and Urban Studies.

Purpose: to determine whether, during the period 1962-1965, private business had been attracting its share of college graduates, and more specifically, college graduates who were at the top of their class academically, as compared with the numbers of graduates recruited by government, education, hospitals, and research.

Data Used: TALENT data were used to supplement data from the National Opinion Research Center in answering the question about college graduates in general. The sample consisted of males and females tested by TALENT in 1960 as 12th graders who reported on the 5-year follow-up that they had received a bachelor's degree. The variables included 5-year follow-up data on job, job satisfaction, career plans, steps taken toward career plan, satisfaction with decisions made, degrees earned and planned, college attended, major, grades.

Analyses: Employers were categorized as Private Business/Industry (subdivided into Large Firms, Small Firms, and Self-Employed/Family Organizations/Partnerships); Government (including Military); Schools; Hospitals/Welfare Organizations/Churches; and Colleges/Research. TALENT provided percentage distributions of males and females with each category of employer, as well as percentage distributions of level of job satisfaction for males and females with each category of employer.

Findings: Comparison of NORC and TALENT data indicated that, from 1962-1965, there had been a small decline in the percentage of male college graduates employed in business and industry, an increase in their employment in colleges and research organizations, and possibly an increase in employment in government/military. For women, the percentage employed in private business decreased, while employment in government and in schools below the college level increased. Job satisfaction was high for both the NORC and AIR samples at all the employer categories, except for "Government/Military" for males which was interpreted as due to males' dissatisfaction with the draft. There were slight increases in job satisfaction from 1962-1965 for males in college/research and school employment, and for females in self-employment or employment in a family organization or partnership and in school employment. There were slight decreases in satisfaction, for males, in employment in the area of nonprofit organizations (hospital/ welfare/church), but this may not have been significant since the TALENT comparable category included only hospitals; and for females in the area of college/research.

31. Combs, Janet, & Cooley, W. W. Dropouts: In high school and after school. American Educational Research Journal, 5(3), May 1968, 343-363.

Purpose: to describe high school dropouts, as compared with a control group of graduates who did not continue their education beyond high school, in terms of abilities, interests, personality characteristics, high school activities, socioeconomic background, reason for leaving high school, and post-high school activities.

Data Used: The sample consisted of all TALENT 9th graders who were known to have later dropped out of high school, plus 25% of the male and 20% of the female TALENT high school graduates who did not continue their education beyond high school. Those with missing data were eliminated. Follow-up weights were used. The sample was also restricted to those with one-year follow-up data. The variables included TALENT general academic aptitude composite, the interest scales, 19 ability scales, the SAI scales, Lohnes' 11 activities scales based on the SIB, the TALENT SES composite, and (follow-up) reason for leaving high school, post-high school education, occupation, salary, military duty, and marital status.

Analyses: Tables were compiled showing percentages of male and female dropouts and controls at each of four SES or general academic aptitude levels and for different high school curricula. Other tables showed mean scores of dropouts and controls, pooled standard deviation, and F ratio for the ability, interest, and personality scales.

Findings: Male and female dropouts tended to score lower on the ability tests; the differences for verbal tests were greater than for nonverbal. Male controls were more interested in sports, physical science, engineering, and math; male dropouts were more interested in labor, skilled trades, and music. Female controls were more interested in academic subjects and sports; female dropouts were more interested in Hunting-Fishing, Mechanical-Technical, Skilled Trades, and Labor. Female controls came from higher socioeconomic levels than dropouts, but male controls and dropouts did not differ significantly in socioeconomic background. At one year after high school, more of the dropouts were married; male controls held slightly higher-level jobs, but mean salaries of dropouts were slightly higher.

32. Cooley, William W., & Flanagan, John C. Project TALENT: Report of the eleventh-grade follow-up study. Project TALENT, 1965.

This report presents results of the one-year follow-up of 11th graders. Findings include the following: After graduation from high school, 45.5% did not continue in any type of school, while 38.5% entered college. There were 7% more boys than girls in college. The other 16% entered technical institutes, nursing schools, business schools, and the armed forces. By 1962, 77% of those enrolled in college were still in college, while 23% had dropped out. A total of 36% of the college students held jobs--18% full time and 18% part time. 17% of the 11th-grade students were married, and 21% of the boys had been or were on active duty in the armed forces. (ERIC)

33. Cooley, W. W., & Becker, Susan J. The junior college student. Personnel and Guidance Journal, January 1966, 464-469. (ED 012 609)

Purpose: to describe the junior college student in terms of abilities and socioeconomic background.

Data Used: The sample consisted of 35,000 TALENT 11th graders with follow-up data. A randomly selected subsample of 1,000 students was used for the discriminant analysis. The variables included (1960) six information scales, four verbal achievement scales, Creativity, Abstract Reasoning, and two math achievement scales; SIB items on parents' education, father's job, and home facilities; and (follow-up) post-high school education.

Analyses: The students were grouped according to whether they attended a four-year, two-year, or no college. The mean score of each group was determined for each of the ability variables. A discriminant analysis was performed on the three groups separately by sex for the ability and socioeconomic variables, and Mahalanobis distance matrices were presented to show the group profiles.

Findings: Junior college students were more like noncollege students in terms of ability, and more like four-year college students in terms of socioeconomic background. Sex differences on the ability measures were greater than the differences among the three college-planning groups.

34. Corbin, Nancy B. A preliminary study of male versus female pay equity using Project TALENT data. HR251, January 1977.

Purpose: to compare the relative earnings of males and females with the same educational training, working in similar occupations for similar lengths of time.

Data Used: The sample consisted of 11th and 12th graders from the 1960 sample for whom complete information was available for selected variables. The variables were Reading Comprehension scores, job satisfaction, reported hourly wages, and amount of education obtained.

Analyses: Reported annual salaries were corrected for part-time employment and converted into hourly wages. Male versus female wages in 30 different occupations were compared.

Findings: When reported annual salaries were corrected for part-time employment and expressed in terms of hourly wages, the mean hourly wage for men was found to be $5.02. The mean hourly wage for females was found to be $3.50, or 70% of the male mean. The author noted that this result is significantly different from findings of other studies, where the median salary for females was reported to be 57% of the male median. A comparison of male versus female salaries showed that women were making as much or more than men with equivalent educational backgrounds in eight of the 30 occupations. In all cases, the occupations in which females reported higher wages than males were considered "professional" and required at least a bachelor's degree. The author suggests that the most significant finding of the study was that the more education a female has, the more likely she is to have pay equity with, or receive a higher wage than, males in the same occupation.

35. Cross, K. Patricia. New students and new needs in higher education. Center for Research and Development in Higher Education, University of California, Berkeley, 1972. (Note: This publication is out of print and is no longer available; see Related Publications below.) (88851)

Sponsor: Cooperative Research Program, U.S. Office of Education

Purpose: To describe characteristics and assess educational needs of college students scoring in the lowest third among national samples of young people on tests of academic ability.

Data Used: The study used data from many sources, including four longitudinal studies conducted during the years 1960-1969--TALENT, the Growth Study (Educational Testing Service), SCOPE (University of California at Berkeley), and CGP (College Entrance Examination Board). Two-year colleges were sent a questionnaire prepared for the study which asked about remedial programs. The TALENT sample for this study consisted of men and women tested in 1960 as 12th graders who had both 1- and 5-year follow-up data. 1960 variables included the TALENT composites for general academic aptitude and SES as well as the interest scales, personality scales, some of the information and ability scores, and SIB questions on memberships, hobbies, work, social life, reading, studying, grades, guidance, home background, health, and plans. Variables from the follow-ups included post high school education, degree or license obtained, whether working full time, salary, satisfaction with important decisions, and ratings of value of education for the individual's occupation and quality of life.

Analyses: The sample was divided into an upper, middle, and lower third on the basis of the individual's TALENT general academic aptitude composite score. Crosstabulations were run showing percentages at each aptitude level on each of the other 1960 variables. Tables including follow-up data and upper, middle, and low thirds on SES and academic aptitude were also prepared. Comparisons were made between descriptions derived from TALENT data and from the other three data bases.

Findings: The percentage of low-ability students going to college had increased from the earlier studies to the later ones. Low-ability students typically had nonacademic hobbies such as crafts, car repair, cooking, and sewing when in high school. The majority had blue-collar fathers and did not plan to go to college. At the follow-up, they tended to value "income" more highly among job characteristics than did high-ability students; other job characteristics important to them were freedom to make own decisions, opportunity for promotion, and friendly co-workers. Suggestions were offered for ways in which the American educational system could become more responsive to the needs of low-ability students.

Related Publications

Cross, K. Patricia. Beyond the open door. San Francisco, California: Jossey-Bass, 1971.

36. Cureton, E. E. A factor analysis of Project TALENT tests and four other test batteries. American Institutes for Research, 1968.

The Knox County, Tennessee students who had taken the TALENT battery in their junior year of high school were retested as seniors with four other batteries: Flanagan Aptitude Classification Tests (FACT); Differential Aptitude Tests (DAT); General Aptitude Test Battery (GATB); and Essential High School Content Battery. A factor analysis was then done of the tests. The report discusses methods and results of the factor analysis and compares the methods used with those in two other Project TALENT studies.

37. Cureton, E. E. Project TALENT tests as anchors for equating other tests. American Institutes for Research, 1973.

This report discusses the methodology and results of an equipercentile equating study in which most of the tests of three widely used multiple aptitude batteries were equated to tests in the Project TALENT battery. The three batteries equated to TALENT tests were the Flanagan Aptitude Classification Tests (FACT); Differential Aptitude Tests (DAT); and the General Aptitude Test Battery (GATB). The purpose of the equating was to make it possible to interpret the three other batteries in terms of the Project TALENT norms, which were based on very large samples representative of the entire population of American secondary school students.

38. Cureton, Louise Witmer. Early identification of behavior problems. Final Report, Vol I. Washington, D.C.: American Institutes for Research, 1970. (D-47)

Sponsor: National Institutes of Mental Health, U.S. Department of Health, Education, and Welfare

Purpose: The investigation was designed to search, among the tests and questionnaires of the Project TALENT battery, for possible predictors of adolescent problem behavior. Problem behavior was defined as including delinquency, truancy, absenteeism, dropout, illegitimate pregnancy, emotional illness, and school disciplinary actions.

Data Used: Data on "problem behavior" came from school records, police juvenile divisions, juvenile court, social and mental health agencies, and health departments in one Southern county. Project TALENT data on participants from high schools in this county was used. The 1960 tests had been administered to all students in grades 8-12 in the county. TALENT variables included were: all the SAI personality scales, all the interest inventory scales, most of the SIB items, and information and ability test scores.

Analyses: Preliminary analyses of individual SIB items, using multivariate chi-square tests, showed problem students to differ from nonproblem on several variables. Discriminant function analyses showed problem students to differ from nonproblems on many cognitive measures and several interest inventories. Following the preliminary analyses, the approximately 1000 items in the TALENT battery were reduced to 44 clusters: eight achievement and aptitude clusters, four personality clusters, seven interest clusters, and 25 biographical information clusters. Standardized cluster scores were computed for all examinees. The total examinee population was divided into subsamples on the bases of sex, race, grade, and presence or absence of various problems. Multiple linear stepwise regression analysis, using the cluster scores as predictor variables and the problem vs. nonproblem categories as criteria, were run on 138 subsamples.

Findings: The best predictors of delinquency were social maturity (dating, driving, number of athletic teams) and poor school attitude (failing, missing assignments, not paying attention, poor reading and report writing, carelessness). Low scores on the English cluster (usage, grammar, punctuation, etc. and Arithmetic Computation), social maturity, and poor health were strong predictors of all of the other problem categories. Other frequently occurring predictors found in the analyses were low science and outdoor interests, impulsiveness, foreign language in the home, large families, more group activities, and more guidance from school personnel than from parents. Problem students sometimes made higher scores on science, mathematics, and perceptual speed tests. Low economic status and broken home (including mother working) were not nearly so important as sometimes found in other studies and in the preliminary analyses for this study.

39. Cureton, Louise Witmer. Arrests for drunkenness of young adults and their parents and adolescent behavior problems. Palo Alto, California: American Institutes for Research, 1973.

Sponsor: National Institute on Alcohol Abuse and Alcoholism

TALENT's special saturation sample of Knox County, Tennessee, which included all the 8th through 12th graders in all the public, private, and parochial schools, was the group used in this study of relationships between parental arrest records and children's behavior. Cluster scores for aptitude and achievement tests, school attitude, and school grades were based on the TALENT 1960 test battery. A new socioeconomic status scale was formed from the TALENT measures. Identifying information about parents was obtained from the 1960 SIB, and responses to TALENT follow-up surveys provided information on address changes and on name changes for married women. Records of arrest for drunkenness were obtained from police files for both parents and children. Children whose parents had/had not been arrested for drunkenness were compared for arrest records, school performance, and problem behavior. Findings included that boys' school achievement was somewhat lower when fathers had been arrested; young adults with arrest records had poorer records of school achievement; and children of arrested parents more often had behavior problems in adolescence.

40. Dailey, J. T. Analysis of Project TALENT Information Test to estimate possible value to the Air Force system of personnel selection and classification. Final Report. American Institutes for Research (Washington, D.C.), August 1961. (C-36)

Sponsor: Personnel Laboratory, Wright Air Development Division (ARDC), Lackland Air Force Base, Texas

Purpose: To determine whether Project TALENT Information Test scales could be used to predict motivation or interest in certain fields, for purposes of Air Force personnel selection and classification.

Data Used: The Project TALENT Information Test was administered in the summer of 1960 to approximately 1,000 airmen in basic training.

Analyses: The analysis was based on the assumption that information tests measure both motivation to learn and ability to learn (general intelligence). The sample was divided at random into two halves (subsamples A and B). A regression equation to predict raw score for each information area from total information score was obtained on the basis of the subsample A data. These equations were then used to compute a predicted score for each information scale for each airman in both subsamples. The predicted score was subtracted from the obtained score for each scale to obtain "corrected" scores which were thought to represent the degree to which that airman's interest in that area had been measured. Then the intercorrelations among the corrected scores were computed for each subsample separately.

Findings: The scales with the highest residual reliabilities were Mathematics, Electricity and Electronics, Sports, Hunting and Fishing, and Physical Science. Other scales with significant reliabilities were Literature, Music, Social Studies, Aeronautics and Space, Mechanics, Farming, Home Economics, and Theater and Ballet. It was concluded that these 13 scores were indicative to an appreciable degree of motivation or special aptitude in the information areas sampled by the test, and that the other 12 scores merely measured general information.

41. Dailey, John T., Shaycoft, Marion F., & Orr, David B. Calibration of the Air Force Selection Tests to Project TALENT norms. Technical Report. Washington, D.C.: American Institutes for Research, October 1961. (C-33)

Sponsor: Aerospace Medical Division, Air Force Systems Command, Brooks Air Force Base, Texas

Purpose: The battery of aptitude tests used by the Air Force for selection and classification of its personnel was calibrated to the Project TALENT battery so that performance of persons taking the Air Force test could be interpreted in terms of the nationwide Project TALENT norms.

Data Used: The TALENT battery was administered by the Air Force to approximately 3,300 basic airmen stratified by Armed Forces Qualification Test (AFQT) deciles. The Air Force provided Project TALENT with records of the airmen's scores on the AFQT, the Air Force Officer Qualifying Test (AFOQT), and the Airman Qualifying Exam (AQE).

Analyses: Intercorrelations were obtained among 114 variables: 82 TALENT scores, 31 Air Force test scores and composite scores, and AFQT. The best predictive composite for each criterion test was picked on the basis of a stepwise multiple regression analysis done separately on two equivalent subsamples.

Findings: Appropriately weighted scores from selected items from the TALENT battery gave composites closely paralleling the Air Force tests. Since the Air Force tests were extremely comprehensive and were designed to measure most of the aptitude factors associated with a wide variety of airman and officer assignments, it was concluded that the TALENT tests could be expected to show similar overlap and parallelism for most of the aptitude tests currently in use for occupational selection and classification.

42. Dailey, John T. Study of the relationships between characteristics of Project TALENT schools and amount of impact aid received. Education Research Project, Washington, D.C., April 1965. (T-3)

Purpose: This was part of a larger study by Stanford Research Institute of the effects of PL874 and PL815 desired by the Commissioner of Education. The three questions studied were: (1) What kinds of schools receive impact aid? (2) What do they do with it? (3) How does it affect their operations and the results they obtain?

Data Used: The sample consisted of the 800 public senior high schools that participated in Project TALENT. The variables included: school means for 12th graders on English Total, Reading Comprehension, Abstract Reasoning, Math I, and Math II + II; school means for 12th grade males and females separately on Information Total and Physical Science Information; and data from the school questionnaires on grades, length of classes and school year, class sizes, special classes, school policies, staff needed, facilities and equipment, teacher characteristics, enrollment, guidance program, housing quality in community, location, finances, and dropout rates?

Analyses: For each of the 800 TALENT high schools the amount of impact aid received by its school district in 1960 under Public Law 874 was converted into proportion of total expenditures. This figure was correlated with the 49 test and school characteristics variables. To simplify the task of interpreting the large number of correlations, multiple factor analysis was performed. The five factors extracted correlated highly with five of the original variables-Reading Comprehension, Rural-Urban, Per-Pupil Expenditure, Degrees for Teachers, and Percentage of Male Dropouts. Amount of impact aid was cross-tabulated with 158 school characteristics items from the GSC, holding school size, rural-urban status, or USOE region constant.

Findings: Impact funds tended to go to urban schools with average or better housing, especially those in the Southeastern states. A number of other factors that were correlated with receiving impact funds, including that they tended to go to schools spending the least, were explained by the fact they tended to go to schools in the Southeast. There seemed to be no consistent pattern in how the schools used the impact funds, and the impact aid had no detectable effect on the performance of students and on school output. The author suggested the explanation that the amount of funds involved was relatively small and that funds going to schools with no strings attached were likely to be used in the same way as the schools' regular funds.

43. Dailey, John T., & Neyman, Clinton A., Jr. Development of a curriculum and materials for teaching basic vocational talents. Final Report, George Washington University Education Research Project, July 1967. (ED 017 689)

This project, sponsored by the U.S. Office of Education, Bureau of Research, Division of Adult and Vocational Research, involved development and evaluation of training materials to teach basic vocational skills in the areas of abstract reasoning, mechanical comprehension, and spatial visualization to 8th and 9th grade students from minority or culturally deprived groups. The materials developed, which included paper-and-pencil exercises, readers, and laboratory equipment and demonstration devices, were tried out in eight school systems in the East, Midwest, and Southeast. To evaluate the materials, pre- and posttests made up of parts of the TALENT test battery were given. The TALENT tests used for this project were: Abstract Reasoning, Mechanical Reasoning, Arithmetic Reasoning, Visualization in Two and Three Dimensions, Reading Comprehension, Information Part I, and Interest Inventory Parts I and II.

44. **Darlington, Richard B., & Cieslak, Paul J. Estimating the validity of educational tests. Final Report, June 1971. (95079)**

Sponsor: U.S. Office of Education, Bureau of Research

Purpose: to check the accuracy of a new method developed by the principal investigator for evaluating the validity (or predictive power) of empirically constructed tests, which were defined as tests in which actual data from subjects (e.g., grades, IQ scores, items in interest inventories) are used in the test construction. The investigator then uses statistical procedures to select a subset of items or subtests that, according to the available data, will accurately predict a criterion variable such as grade point averages or number of years a student will spend in school.

Data Used: The sample consisted of TALENT participants tested in 1960 as 12th graders who stated on the 5-year follow-up that they were employed and that they had not gone to college. This sample had been selected with the intention of using salary as a criterion variable and was retained when the variable had to be changed. The variables used in the study were 197 items from the TALENT Interest Inventory, in which the subject rated on a five-point scale his interest in various occupations or activities.

Analyses: The standard method for evaluating empirically constructed tests is the cross-validation technique, which involves administering the test to a second sample of subjects drawn from the same population as the sample used in constructing the test. In the new method, the total available sample of subjects is divided into three equal subsamples, and a test is constructed in each subsample by the same method used in constructing the final test. The validities and intercorrelations of the three subtests are estimated using the subsample(s) of subjects that were not used in constructing the test(s) being validated or intercorrelated. The six correlations that result are entered into a formula to estimate the validity of the final test constructed using the total available sample. Project TALENT data were used to test two hypotheses related to the new method for estimating test validity.

Findings: The new method appeared to be a reasonable alternative to the double cross-validation procedure for estimating the validity of an empirically constructed test, but neither method was found to be clearly superior.

45. Decker, Michael. Report to the Yardstick Project: The TALENT analysis. (Mimeo) (T-55)

Sponsor: The study was conducted by the Yardstick Project, an independent research program (located in Cleveland, Ohio) sponsored by a grant from the Martha Holden Jennings Foundation.

Purpose: The Yardstick Project had the overall objective of developing improved instruments and techniques by which school board members and superintendents could evaluate their schools. This study focused on explaining variations in school policy as a function of community variance.

Data Used: The sample originally consisted of 207 TALENT high schools in communities with 2,500-25,000 population having only one high school. This was the same sample used by J. Alan Thomas in his study of the determinants of school efficiency (A123 in this bibliography). The sample was reduced to 193 schools for this study due to missing data. The variables, which were selected from the Thomas study, included TALENT data (from the General School Characteristics Questionnaire) on homework per day, number of books in school library, age of school plant, male teachers' starting salary, and average amount of full-time experience for teachers, as well as school means for 10th graders' Abstract Reasoning scores. In addition, several community characteristics variables were selected from Thomas's U.S. Census data.

Analyses: Each dependent variable (school characteristics) was related to the composite of the independent variables (community characteristics and Abstract Reasoning means) by stepwise regression.

Findings: The variables that best explained the school characteristics were (in the order given) school mean on Abstract Reasoning, percentage unemployed in community, percentage engaged in manufacturing, percentage residing in state of birth, and percentage of elementary school children in private schools. It was concluded that, in forming school policies, schools consider, first, student intelligence levels, and then the community characteristics.

46. Doberstyn, Gary James. The effects of education, social background, and job satisfaction factors on attitudes toward job change and career change. Ph.D. dissertation, University of Michigan, 1978.

Purpose: to investigate to what extent and under what conditions level and type of education affect attitudes toward voluntary job and career change.

Data Used: The sample used for this study was a subsample of the TALENT participants tested in 1960 as 11th graders who responded to the 11-year follow-up. The subsample included all blacks, all of the nonrespondents for whom data had been obtained in the special nonrespondent follow-up, and an equal number of males and females. The subsample was chosen to make the data manageable and, hopefully, to avoid bias, but a comparison of weighted means and standard deviations for race and sex subgroups showed the subsample biased in the same direction as the 11-year follow-up sample as a whole--toward more culturally advantaged whites with greater academic ability. The dependent variables were attitudes toward job and career change (taken from 11-year follow-up questions asking whether the respondent planned to remain in current job and if not, what his plans were, and whether the respondent had given up or considered giving up a successful career to go into an entirely different field. The independent variables were job satisfaction, job advancement expectations, educational level, educational curriculum, labor force experience, and race (taken from questions on the 11-year follow-up); and the TALENT composites for general academic aptitude and SES.

Analyses: Multiple classification analysis, a variant of multiple regression, was used to ascertain how well the independent variables explained attitudes toward job and career change and how effective each independent variable was as a predictor when other predictor variables were controlled.

Findings: About 90% of both males and females were satisfied with their current jobs. Males and blacks placed more value on income, job security, and promotion, but for the majority of respondents the most important job characteristic was interesting, challenging, and worthwhile work. About 60% expected to advance in their jobs (three times as many males as females). Blacks more often planned to change jobs. The best predictors of attitudes toward both job and career change were job satisfaction and job advancement expectations.

47. **Evans, Rupert N., & Galloway,** Joel D. Verbal ability and socioeconomic status of 9th and 12th grade college preparatory, general, and vocational students. *The Journal of Human Resources*, VIII(1), 24-36. (88857)

Purpose: to determine the differences between students in three basic kinds of high school programs (college preparatory, vocational education, and the general program) and to examine the implications of these differences for curriculum planning.

Data Used: There were three subsamples (for Phase I of the study) 9th graders with retest data, (Phase II) a 20% random sample of 9th graders with 1-year follow-up data, and (Phases III and Iv) 12th graders with 1-year follow-up data. The variables included TALENT composites for SES and general academic aptitude; personality scores on Tidiness and Leadership; SIB questions on curriculum taken in high school (1960 and 1963), guidance (1960), high school courses taken (1963), and job planned in 12thgrade; and 1-year follow-up questions on how soon after high school respondent was working full-time, whether graduated from high school, and post-high school education.

Analyses: Crosstabulation was used as the mode of analysis.

Findings: While most of the students in the college preparatory curriculum had high SES and high academic ability, most of those in the vocational curriculum had low SES and academic ability. Students in the general curriculum were intermediate in ability and SES, but the general curriculum showed an increase in the percentage of low-ability students from 9th to 12th grade. The stability of 9th grade curriculum choice for males was greatest for vocational students (91% in voc ed at 12th grade had been in voc ed at 9th grade), 76% for college prep, and lowest (59%) for general; for females, stability was lower than males for voc ed (79%), about the same for college prep (72%), and lowest for general (46%). The authors suggested that this information supported the philosophy of the comprehensive high school, since the provision of separate schools for students in college preparatory and vocational programs would result in a great deal of socioeconomic segregation.

48. Final Summary Administrative Report: Statement of Work Performed under Contract No. AF 41(609)-3086-AIR Project F-20. Report to monitor from Project TALENT staff, 12 January 1967. (F-20; same as Data Bank Project T-25)

Sponsor: Aerospace Medical Division, Brooks Air Force Base, Texas

Purpose: The Air Force wanted analyses of the Project TALENT aptitude and five-year follow-up data that would provide estimates of performance of various occupational and college major subgroups on operational Air Force tests.

Data Used: This study built on the work performed in an earlier Project TALENT study (C-33), in which the Airman Qualifying Examination (AQE), Air Force Officer Qualifying Test (AFOQT), and Armed Forces Qualification Test (AFQT) had been standardized to the Project TALENT battery. In this study Project TALENT 12th graders were classified into occupational and college major subgroups based on their responses to the 5-year follow-up questionnaire, and their scores were predicted on the Air Force Officer Qualifying Test (AFOQT), Airman Qualifying Examination (AQE), and the Armed Forces Qualification Test (AFQT) for males and Armed Forces Women's Selection Test (AFWST) for females.

Analyses: For each 12th grader, estimates were computed for scores on the Air Force tests using the regression equations developed in C-33. These score estimates were then converted to Air Force percentile scores or to the AFQT/AFWST categories used by the Air Force. Using the 5-year data, the 12th graders were categorized into subgroups, separately by sex, according to occupation, college major, and branch of the military if applicable. For each of the subgroups, unweighted and weighted frequency distributions, cumulative frequency distributions, percentage distributions, and cumulative percentage distributions on each of the 11 converted estimated Air Force scores were prepared. Means and standard deviations were also obtained for each of the distributions.

Findings: Tables showing the distributions of TALENT occupational/college major/military service subgroups on the estimated Air Force test scores were delivered to the Air Force.

49. Fitzpatrick, Robert. A study of Project TALENT data relevant to stewardess selection. Interim Report. American Institutes for Research, Pittsburgh, Pennsylvania, November 1965. (GO-2, T-11)

Purpose: To find areas in which 12th grade girls who expressed high interest in becoming airline hostesses differed from other 12th grade girls, either by being further above the average than they were in most areas or in being below the average.

Data Used: The sample consisted of 748 girls tested by Project TALENT as 12th graders in 1960 who indicated high interest in the jobs of airline hostess, social worker, or nurse, who expected to go to college, and who had Information Test scores at or above the 75th percentile. The variables included the SAI personality scales, Interest Inventory items on activities, SIB items on activities, studying, courses, grades, and career plans, and scores on the Information Test and on tests of verbal skills.

Analyses: Mean scores of the 748 selected girls were compared to the mean scores of all TALENT 12th grade girls to identify areas in which the selected girls were further above the average than they were in most areas or further below the average.

Findings: Compared with all 12th grade girls, the 748 selected girls were more active in clubs and activities that required public performances; did serious reading, liked school, and were confident of their academic abilities, especially in the area of writing; had good reading comprehension but were not very good at spelling or effective written expression. They were well-informed about science, except for the area of engineering. They evaluated themselves as hard-working, persistent, and dependable. Many were interested in teaching careers, but not in clerical or business careers.

50. Flanagan, J. C., Dailey, J. T., Shaycoft, Marion F., Orr, D. B., & Goldberg, I. Studies of the American high school. Project TALENT, 1962.

This report presents the results of the school questionnaires answered by principals and counselors at the TALENT participating high schools in 1960. Topics discussed include school characteristics, guidance and testing programs, the characteristics of high schools found to be important or unimportant for educating students, and a taxonomy of high schools developed for use in TALENT studies.

51. Flanagan, J. C., Davis, F. B., Dailey, J. T., Shaycoft, Marion F., Orr, D. B., Goldberg, I., & Neyman, C. A., Jr. The American high school student. American Institutes for Research, 1964.

This report presents the results of the 1960 testing of 9th through 12th graders. Results of the 12th grade one-year follow-up are also included. Topics discussed include reliability of the 1960 battery, what the tests measured, correlations between scores in different areas, sex differences in test performance, the average ability and information levels of the students, improvement from 9th to 12th grade, and procedures used in the one-year follow-up survey.

52. Flanagan, J. C., Cooley, W. W., Lohnes, P. R., Schoenfeldt, L. F., Holdeman, R. W., Combs, Janet, & Becker, Susan. Project TALENT one-year follow-up studies. Project TALENT, 1966.

This report presents percentages of responses to questions in the one-year follow-up survey and discusses the procedures used in the survey, ways the results can be interpreted, suggestions for redefining career plan groups, and speculations about the implications for guidance.

53. Flanagan, J. C., & Jung, S. M. Progress in education: A sample survey (1960-1970). Final Report. Palo Alto, California: American Institutes for Research, 1971.

Sponsor: U.S. Office of Education

Purpose: to estimate changes in mean performance levels occurring during the first decade of Project TALENT.

Data Used: In 1970, 11th graders in a random sample of one-fifth of the high schools that had participated in the 1960 TALENT survey were given the 1960 TALENT Reading Comprehension test and answered 40 student information (SIB) items and an essay question on their views of an ideal occupation. The principal of each participating school answered a questionnaire on changes in the school's curriculum and neighborhood since 1960.

Analyses: The reading comprehension scores, SIB responses, and essays written by the 1970 11th graders and the 1960 11th grade sample were compared.

Findings: Only a small improvement was found in the reading skills of the 1970 11th graders over the 1960 11th graders. School guidance programs appeared to have become somewhat more effective, with 1970 students indicating more useful discussions with counselors and more awareness of their own abilities and potentialities, and selecting more realistic occupations. The improvement in realism of career planning was more marked for boys than for girls. A large proportion of the 1970 students felt they could have learned much more with a better instructional system (the 1960 students had not been asked this question). There was a slight decrease in prolonged school absenteeism but a trend toward reports of poorer health (which the authors suggested might be linked with increased drug usage by students).

Related Publications

Flanagan, John C. Some Project TALENT findings regarding career planning. Paper presented at a meeting of the National Vocational Guidance Association held in connection with the annual convention of the American Personnel and Guidance Association, Chicago, Illinois, March 25-30, 1972. (ED 066 686)

54. Flanagan, J. C., Shaycoft, Marion F., Richards, J. M., Jr., & Claudy, J. G. *Five years after high school*. Palo Alto, California: American Institutes, 1971.

Flanagan, J. C., Shaycoft, Marion F., Richards, J. M., Jr., & Claudy, J. G. *Five years after high school: Appendix II*. Palo Alto, California: American Institutes for Research, 1971.

This report presents results of Project TALENT's five-year follow-up survey. Topics discussed include college attendance, choice of major, college graduation, noncollege post-high school education, changes in career plans, and salary of those who were working five years after high school. Some of the findings of these studies are that only a few respondents were still planning the same career five years later that they had planned in high school; men were earning, on the average, $600/year more than women; and college attenders were earning more than nonattenders, especially among women. Other topics discussed are methods of grouping careers, a new statistical method (propinquity analysis) which takes into account occupations for which average ability levels are most appropriate (such as electronics technician, a career for which some people might be overqualified), and use of tobacco by young adults. Appendix II is a separate volume containing means, standard deviations, and related statistics on high school test scores for TALENT participants who had career plans in each of 165 occupations five years after high school.

55. Flanagan, J. C., Tiedeman, D. V., Willis, M. B., & McLaughlin, D. H. The career data book: Results from Project TALENT's five-year follow-up study. Palo Alto, California: American Institutes for Research, 1973.

Sponsor: National Institute of Education, U.S. Office of Education

This report summarizes interim results of the project, providing the high school student and guidance counselor with a large amount of objective data on the high school characteristics of students who planned various occupations at the five-year follow-up. For each occupation, a short description and a diagram showing the profile of high school characteristics of those planning the occupation at the five-year follow-up is given.

56. Rossi, R. J., Bartlett, W. B., CAmpbell, E. A., Wise, L. L., & McLaughlin, D. H. Using the TALENT profiles in counseling: A supplement to the career data book. Palo Alto, California: American Institutes for Research, 1975.

Sponsor: National Institute of Education

This report updated the profiles given in the Career Data Book with data from the 11-year follow-up survey. The Career Data Book was only an interim report, because the five-year period after high school was not long enough to provide a stable estimate of career persistence and so could only describe career plans. This report is based on one-half of the 11-year follow-up data and is an intermediate step toward the goal of developing a sophisticated career planning tool based on the experiences of TALENT participants.

57. Flanagan, John C., & Russ-Eft, Darlene. An empirical study to aid in formulating educational goals. Final Report. Palo Alto, California.: American Institutes for Research, 1975. (42000)

Sponsor: Field Initiated Studies Program, National Institute of Education

Purpose: Educational experiences and requirements of individuals were studied as a basis for formulating educational priorities and goals and developing appropriate curricula.

Data Used: Project TALENT data for the sample was added to data gathered in a personal interview on earlier school experiences, adolescent development and subsequent education, relations with relatives and spouse, occupation, financial well-being, health, leisure interests and friends. The sample consisted of 500 men and 500 women who had been part of TALENT's 1960 15-year-old sample. In addition to the basic sample of 1,000, another sample of 1,000 was drawn to provide for replacement of members of the basic sample who could not be located or who refused to be interviewed. In drawing the samples, the probability of including a case from any particular grade and sex was made directly proportional to the number of cases in the total population that that case represented in the Project TALENT sample, so that the differential sampling weights would not have to be used. The total sample of 2,000 was stratified on three variables--region of the United States in which high school was located, SES of student's family in 1960, and Reading Comprehension score in 1960--before being split into the basic and replacement samples. The Project TALENT variables used were the entire set of 1960 data plus any follow-up information available for each individual.

Analyses: 100 interviews were examined intensively to develop codes representing the range of responses. The codes for selected questions were tried out on 50 more interviews and refined, and the refined set of codes was used to classify responses for the remainder of the interviews. The coded interview responses were merged with the individual's TALENT data file. Each case history was analyzed separately to isolate the major factors, both positive and negative, that determined the individual's current quality of life as compared with what it might be.

Findings: The sample members appeared to be relatively satisfied with their quality of life. The areas in which they expressed the greatest satisfaction were health, spouse, friends, children, and relationships with relatives. The greatest discrepancies between importance and satisfaction were in the areas of developing and using your mind, developing maturity, health, spouse, and job. The most frequent educational deficiencies noted in a careful review of the data for a representative subsample of 200 were: vocational guidance (inadequate for 88% of the boys and 75% of the girls), quality of teaching, need for individualized instruction, need for appropriate curriculum, and need for counseling on personal, social, and emotional problems.

58. Flanagan, J. C. Changes in school level of achievement: Project TALENT ten- and fifteen-year retests. Educational Researcher, 5(8), 1976, 9-12.

The 10-year retest referred to in this article was the readministration of the Reading Comprehension test to 20% of the TALENT schools (see 53. Flanagan & Jung, 1971). In the 15-year retest, ten of the ability tests given in 1960 were administered to students in 17 TALENT high schools as part of the standardization of a new guidance program under development by AIR (see 137. Planning Career Goals). Between 1960 and the 1975 retest, performance on Vocabulary and English dropped substantially, as did scores on Computation and Quantitative Reasoning. Reading Comprehension and Mathematics remained about the same; Abstract Reasoning and Creativity showed score gains for both men and women. In tests of Mechanical Reasoning and Visualization, men's scores dropped slightly and women's showed a slight gain. The author commented that studies with larger samples would be needed to determine the contributions of in- and out-of-school activities to these score changes.

59. Folger, John K., Astin, Helen S., & Bayer, Alan E. Human resources and higher education. New York: Russell Sage Foundation, 1970. (T-13, T-16, T-18, T-20, T-21, T-30, T-39, T-44, T-49, T-71)

Sponsors: Carnegie Corporation of New York and Russell Sage Foundation provided financial support. The National Academy of Sciences administered their grants to the Commission on Human Resources and Higher Education, a 12-member body appointed by representatives of four organizations--the American Council of Learned Societies, the American Council on Education, the National Research Council of the National Academy of Sciences, and the Social Science Research Council.

Purpose: to develop an understanding of how the free choice system in higher education was operating to meet national needs. Topics studied included supply-and-demand trends in the arts and sciences and in several professions, and the role of individuals' career choices in keeping supply and demand in adjustment. The special problems of women, people of low SES backgrounds, and immigrants were also discussed.

Data Used: The data for this report came from many sources. Project TALENT data were used in Chapters 5, 6, 9, and 10, which discuss college attendance, career plans of high school and college students, and career development of women and low-SES persons. The TALENT data came from several Data Bank projects conducted by the three authors as well as from reports published by TALENT staff.

For Chapter 5 (the post-high school education analyses), the sample consisted of TALENT 12th graders who had complete 1960 and 5-year follow-up data. Follow-up weights were used to correct for nonrespondent bias. The variables included: (1960) General School Characteristics Questionnaire data on type and size of high school, guidance program, and percentage of students going to college; TALENT IQ composite; some ability, interest, and personality scores; and SIB items on family background, region of residence, size of hometown, geographic mobility, and college and marital plans; (follow-up) college attendance, degree earned, race, religion, marital status, children.

For Chapter 6 (the career plan studies), the sample consisted of TALENT 9th graders. Two subsamples from this group were analyzed, one consisting of those who had taken the 1963 retest, and the other consisting of those with 1-year follow-up data. For the retest subsample, the variables included several information, interest, and ability scores; the temperament measure of Mature Personality; SIB items on 9th grade career choice, curriculum, grades, and guidance; the TALENT SES composite; and GSC data on high school size, high school mean on reading comprehension, and percentage of graduating seniors going on to college. For the *1-year subsample*, career choice at 1960 testing and at the 1-year follow-up were tabulated with several ability scores, Mature Personality, High School Grades, TALENT SES composite, and an appropriate interest measure for several careers.

Analyses: For the post-high school education studies (Chapter 5), the analytical procedure employed was multiple regression. For the career plan studies (Chapter 6), multiple discriminant analysis was used--for the retest subsample, to predict 12th grade career choice, and for the 1-year subsample, to compare the "stables," "recruits," and "defectors" for different variables and careers. The stables were those who had the same career plan at the 1-year follow-up as in 9th grade; the recruits were those who entered each broad occupational group, and the defectors were those who left each group.

Findings: Findings on post-high school education included: Ability was the best predictor of post-high school educational progress for men. For women, marital and family status were as good predictors as ability. SES had an important influence on both undergraduate and graduate college entry. Comparison of TALENT findings with a 1956 ETS study showed a rise in the overall ability level of entering college students. About 45% of those entering college had obtained a bachelor's degree by the 5-year follow-up. 22% of junior college entrants had obtained a bachelor's degree from a four-year college as compared with 60% of four-year college entrants. When ability and SES were controlled, male junior college entrants were still less than half as likely to finish college as four-year college entrants.

Findings on career plans of high school and college students included: Career plan changers often shifted to careers in business or teaching. They tended to shift to careers that were more socially accepted for their sex, and also to shift to careers more in line with their ability level. The analysis of males in the retest subsample showed 12th grade career choice to be best predicted by 9th grade career plans and interests. For females, the best predictors of 12th grade career choice were taking a college preparatory curriculum, math ability, high SES, and receiving guidance on college plans.

Findings on low-SES students and women included: In the early 1960s, a bright but poor boy had only about 55% as much chance of completing college in five years as his well-to-do counterpart, and only about 40% as much chance of entering advanced training.

Related Publications

The following are other publications resulting from the TALENT projects performed by members of the Commission as part of the data gathering for the report, *Human Resources and Higher Education*.

Astin, Helen S. Patterns of career choices over time. *Personnel and Guidance Journal*, *45*, 1967, 541-546. (T-13, T-21)

Astin, Helen S. Career development during the high school years. *Journal of Counseling Psychology*, *14*, 1967, 94-98. (T-13)

Astin, Helen S. Stability and change in the career plans of ninth grade girls. *Personnel and Guidance Journal*, *46*, 1968, 961-966. (T-30)

Astin, Helen S. Career development of girls during the high school years. *Journal of Counseling Psychology*, *15*, 1968, 536-540. (T-13)

Bayer, Alan E. Birth order and college attendance. *Journal of Marriage and the Family*, *28*, 1966, 480-484. (T-18)

Bayer, Alan E. Early dating and early marriage. AIR report planned as article in *Journal of Marriage and the Family*. (T-39)

Bayer, Alan E. The college dropout: Factors affecting senior college completion. *Sociology of Education*, *41*, 1968, 305-316. (T-49)

Bayer, Alan E., & Schoenfeldt, Lyle F. Student interchangeability in three-year and four-year nursing programs. *Journal of Human Resources*, *V*(1), Winter 1970. (T-49)

Bayer, Alan E., Schoenfeldt, Lyle F., & Brown, Marsha D. Delayed and normal progress college students: A comparison of psychosocial characteristics and career plans. *Proceedings*, American Educational Research Association, Los Angeles, 1969.

Burton, Dee. Birth order and intelligence. *Journal of Social Psychology*, *76*, 1968, 199-206. (T-71)

Folger, John K. Some relationships between ability and self-reported grades. *Sociology of Education*, *40*, 1967, 270-274. (T-44)

Serra House Seminar Group, Stanford University. Educational and occupational plans of Mexican-American high school youth. Paper presented to Dr. Helen S. Astin in fulfillment of the requirements of the Serra House Seminar on Higher Education: Problems and Prospects.

Schoenfeldt, L. F., Bayer, A. E., & Brown, M. D. Delayed and normal progress college students: A comparison of psychosocial characteristics and career plans. *American Educational Research Journal*, *7*(2), March 1970.

60. French, Joseph L. Employment status and characteristics of high school dropouts of high ability. Contract OE-5-85-029, U.S. Office of Education. (T-8)

This is the final report of a study involving testing, questionnaire administration, and interviewing of Pennsylvania high school students with IQs of 110 or above who did not complete high school, as well as a comparison sample who did finish high school. Project TALENT provided data used in a part of the study. The TALENT sample consisted of 10% of TALENT's 1960 12th graders, from which all those scoring in the top quartile on the TALENT IQ composite were used in the study. Project TALENT provided frequency and percentage distributions for this sample on 148 SIB items on organizational memberships, hobbies, sports, reading, studying, school changes, age at first grade, courses and grades in high school, length of residence in community, house, books and magazines in home, power tools and cars owned by family, parents' occupation, student's expected occupation, parents' education, military plans, salary expectations, health, and educational plans. (Adapted from ERIC)

61. Gilmartin, Kevin J., McLaughlin, Donald H., Wise, Lauress L., & Rossi, Robert J. Development of scientific careers: The high school years. Final Report. Palo Alto, California.: American Institutes for Research, 1976. (48200)

Sponsor: National Science Foundation

Purpose: to increase understanding of the processes by which today's high school students move toward or away from careers in science. NSF was particularly concerned about whether the small numbers of women and ethnic minorities in science might be related to inadequate career guidance in high school.

Data Used: For developing the Scientific Potential Index, the sample consisted of TALENT 11th graders with 11-year follow-up data. The variables were 1960 data on abilities/achievement and 11-year follow-up data on type of job and level of education attained. For the 1975 testing, the sample consisted of 1,142 10th, 11th, and 12th graders at 11 California high schools. The schools were selected to represent different size communities and different ethnic groups. Data was gathered from the 1975 sample by means of an abbreviated (2-hour) version of the 1960 TALENT battery, designed to assess the student's Scientific Potential and develop a profile of his/her abilities and interests similar to the TALENT Career Data Book occupational profiles; and by means of a questionnaire containing items about career and educational plans; knowledge and attitudes about careers; perceptions of influences on student's career plans; self-estimates of abilities, interests, and values; knowledge and attitudes about the career development process; perceptions of school and community; and various background factors related to entering a scientific career. (The questions about background factors were taken from the 1960 SIB and the TALENT follow-up questionnaires.)

Analyses: Data analyses involved two distinct data bases (Project TALENT and the 1975 testing/questionnaire), made use of several different criterion measures in each, and included a number of analytic techniques. A Scientific Potential Index was developed using linear discriminant analysis to find the pattern of ability scores that most effectively differentiated TALENT 11th graders who were in science jobs at the 11-year follow-up from those who were not in science jobs. Nonability variables that were predictive of establishment of a career in science for individuals with equal Scientific Potential were identified, measured, and compared with the ability variables. These nonability variables included sex, race, family background, high school courses and grades, career guidance obtained in high school, perceptions of self and careers, and plans for educational career. The 1975 questionnaire is printed in full with statistics on number of students making each response, percentage of these with expressed science career plans, and mean Scientific Potentials for students making the response who did/did not have science career plans. An ability/interest profile was developed for each 1975 respondent based on his/her responses to the abbreviated 1960 battery. The profiles were developed similarly to the occupational profiles in TALENT's Career Data Book and the project staff held a one-hour session to explain to the respondents and counselors at each high school how the Career Data Book could be used in conjunction with the respondents' individual profiles as an aid in career planning.

Findings: More than three times as many female high school students were planning science careers in 1975 as in 1960--17% compared to 5%. The percentage of males planning science careers went down from 32% to 24%. In 1975, surnamed students, 23% of the whites, and 29% of the Orientals had science career plans. Males and females did not differ much in Scientific Potential or in knowledge of careers and of their own abilities, but ethnic groups did differ significantly in these respects. Parental college attendance (not necessarily graduation) increased the likelihood of a student's planning a science career; SES appeared to influence chances of entering a science career through its effect on development of abilities by 11th grade. Only 12% of the males and 6% of the females who planned a science career as 11th graders in 1960 were in science careers at the 11-year follow-up, but 25% of the men and over 50% of the women in science careers at the 11-year follow-up had had a nonscience career plan in 1960. The nonscience occupations, other than homemaking, that contained the largest numbers of women with high Scientific Potential were the various teaching specialties and registered nurses. Black men with high Scientific Potential tended to be employed in business management. Of the students with Scientific Potential scores in the upper third of the 1975 sample, 94% of the females and 97% of the males were planning to attend a four-year college. The Scientific Potential Index developed for this project fared well in validation analyses and was found to predict eminence within a science career as well as entry into science careers.

62. Goldberg, Isadore, & Dailey, John T. Research on academic degree projections: The identification and development of talents of 1960 high-school graduates. Final Report. Washington, D.C.: American Institutes for Research, 1963. (D-33)

Sponsor: Science Resources Planning Office, National Science Foundation

Purpose: Project TALENT data was used to provide projections of baccalaureate and doctorate degrees; estimate talent loss in the high-school-to-college transition; and develop a taxonomy of colleges based on objective college characteristics.

Data Used: The sample consisted of 1960 12th graders with 1-year follow-up data. The variables were four TALENT aptitude composite scores (Academic Aptitude, Quantitative Aptitude, Technical Aptitude, and Scientific Aptitude); the SIB; and 1-year follow-up data on college attended, plans for major, and plans for degree.

Analyses: Estimates of the potential supply of persons with baccalaureate and doctoral degrees were obtained by taking 60% of those entering college, for the baccalaureate, and by taking those planning doctorates who were in the top 5% of high school graduates. The college taxonomy was developed using the following broad groupings: primary program (liberal arts, technological, teacher preparation, military), public/private, women's/men's/coed, endowment/National Merit Scholars, with/without professional schools, enrollment, junior/four-year, accreditation.

Findings: 46% of the high school graduates had aptitude in at least one of the four areas (academic, quantitative, technical, scientific), as compared with 25% when only academic aptitude was considered. There appeared to be an underutilization of boys with high levels of scientific and technical aptitudes when college attendance rates were considered. Few of the girls were in the top quarter on scientific or quantitative aptitudes, but most of those went to college. The talent loss in boys was considered greater because more of them had developed abilities in the scientific, quantitative, or technical fields on high school graduation than girls, and an appreciable number of these high-ability boys did not go to college. Of those dropping out of college during the first year, more came from the lower ability groups. 93% of those in the top fourth on ability remained in college through the first year. Regarding selectivity of colleges, the top 10% of high school graduates were in the top 20% of first-year college students in academic aptitude. 43% of men and women in the top 10% of their high school class in academic aptitude who went to college planned a major in engineering, science, or math; the percentages were higher among those in the top 10% on the scientific, technical, or quantitative aptitude composites. Colleges showed above-average selectivity in the engineering, science, and math fields, with those in the top 10% of high school graduates being in the top 40% of first-year college engineering/science/math majors.

63. Greener, Jack M. An investigation of the accuracy of restriction of range correction formulas. Ph.D. dissertation, University of Houston, May 1975. (Unnumbered TALENT Data Bank study)

This methodological study investigated a problem that arises when the relationship between two variables for a population is inferred from the correlation between the variables in a selected sample, where the selected sample consists of individuals exceeding a specified score on one of the variables--for instance, when estimating the validity of admission criteria derived from performance of persons accepted for college or for a job for an applicant group, which will contain a wider range of persons than does the accepted group. Correction formulas had been proposed, and the major purpose of this study was to investigate the effects of violation of the linearity and homoscedasticity assumptions on the accuracy of these restriction-of-range correction formulas. Both simulated and empirical distributions were computed. As raw material for the empirical distributions, data from oil company applicant and employee files and TALENT data were used. The TALENT sample, selected for its size, heterogeneity, and the convenience of its prior availability on a TALENT tape, was the 4% sample including 13,478 males and females tested in grades 9-12. The variables used were sex, grade level, and scores on Information I Total, English Total, Reading Comprehension, Creativity, Abstract Reasoning, Math Total, Mature Personality, and Interest in Physical Science/Engineering/ Math. It was found that correction for restriction of range was not a robust procedure; it was sensitive to even slight deviations from linearity, although less sensitive to violations of the homoscedasticity assumption. Empirical test score distributions frequently violated either the linearity or homoscedasticity assumption or both, limiting the value of the corrected correlations. However, the corrected correlations provided more accurate estimates of the population correlations than did the uncorrected correlations.

64. Hause, John C. Ability and schooling as determinants of lifetime earnings, or, If you're so smart, why aren't you rich? Paper presented at meetings of the American Economic Association in Detroit, December 1970, and published in AEA Papers and Proceedings, May 1971. (T-65)

Purpose: to study the relationship between earnings, ability, and education in males.

Data Used: This presentation reports only a few computations from the project, which had not been completed. TALENT data were used to confirm broad associations uncovered in extensive analyses of data from another source. The sample for the study consisted of TALENT 11th grade males who responded to the five-year follow-up; 1960 and one-year follow-up data were also used. The variables used in the computations were earnings at one- and five-year follow-up; level of education attained at five-year follow-up; and TALENT composites for IQ and quantitative aptitude.

Analyses: Earnings for 1966 were reported earnings for the preceding 12 months plus self-employment income. Earnings for 1962 were obtained by inflating the weekly or monthly pay rate (from one-year follow-up) to annual equivalent earnings. Means and standard deviations of log earnings in 1962 and 1966 and the two ability composites at three education levels were calculated. A table of TALENT data reproduced from The American High School Student was used to illustrate the "strong tendency for higher proportions of people with greater ability to acquire more formal education."

Findings: Analysis of TALENT data tended to confirm the finding that the variables ability, educational attainment, and earnings were positively interrelated.

65. Hoenack, Stephen A., & Feldman, Paul. Private demand for higher education in the United States. Arlington, Virginia: Institute for Defense Analyses, Program Analysis Division, August 1969. (T-76)

Sponsor: U.S. Office of Education

Purpose: The authors suggested that it would be desirable for the public's willingness to subsidize higher education to vary with the private demand for higher education. This report provides information about private demand for higher education that would enable policymakers to explore alternative enrollment possibilities for various categories of students.

Data Used: USOE's National Center for Educational Statistics provided data on tuition charges, attendance, and scholarships at various types of institutions. Government sources provided population and unemployment information. TALENT data were used to determine proportions of individuals who went to college, their characteristics and background, and labor market variables. The TALENT sample included 10th graders with one-year follow-up data. The variables were (1960) SIB questions on family income and parents' education; information scores on Vocabulary and Mechanics; ability scores on Mechanical Reasoning, Visualization in Two and Three Dimensions, Abstract Reasoning, and Arithmetic Reasoning; and (one-year follow-up) items on high school completion, wages, military service, and post-high school education.

Analyses: Variables for each state were constructed for proportion of individuals who went to college (dependent) and the labor market, test scores, education of parents, tuition scholarships, unemployment, wage rate, and transportation costs (independent). Regression equations were used to estimate the effects of a $100 increase in tuition at public and private colleges on changes in enrollment proportions for males and females of three different ability levels and from differing family income backgrounds and to estimate the effect of a $1.00 increase in the hourly wage rate for males and females with different test scores.

Findings: The largest proportion of students who were predicted to be influenced by tuition in their choice of whether to attend college were those who planned to attend four-year public colleges. Changes in tuition at two-year colleges had a small effect on college attendance. Tuition changes at four-year public institutions had a greater impact on enrollment proportions in higher family income groups than in lower income groups; the opposite was true for four-year private colleges. Female college attendance was less responsive to tuition changes than male college attendance (this was explained as being due to the fact that males could expect higher and more reliable monetary returns to education than could females). College attendance among females who scored high on the TALENT ability tests was more strongly affected by tuition at four-year private institutions and less strongly affected by tuition at four-year public institutions; the opposite was true of males. A positive relationship was found between test score and effect of change in wage rate (i.e., forgone earnings) on college attendance. If wage rates rose by $1/hour, the authors would predict no change in college enrollments of students at the 75th academic ability percentile, a rise at the 85th percentile, and a drop at the 65th percentile. (For the lower ability students, immediate opportunities for earnings through working rather than going to college would seem more attractive.) It was emphasized that the results were indicative of long-run group behavior rather than individual behaviors, since state averages had been used.

66. Humphreys, Lloyd G., & Dachler, Hans Peter. Jensen's theory of intelligence. Journal of Educational Psychology, 60(6), 1969, 419-426. (81753)

Sponsor: Office of Naval Research

Purpose: Jensen (1968) had found that rote learning was basic to the development of higher types of intelligence. This study attempted to check on the generalizability of Jensen's findings to a large nationwide sample.

Data Used: The sample consisted of TALENT 9th grade males. Data from Lyle Schoenfeldt's TALENT twin study were also used. (See A73 in this bibliography for a description of how the twin sample was drawn.) The variables for the Humphreys study were TALENT composites for IQ and SES; Memory for Sentences and Memory for Words (used as measures of rote learning); Vocabulary, Info I and II totals, English scales and total, Word Functions, Creativity, Mechanical Reasoning, Visualization in Two and Three Dimensions, Mathematics, Computation, Table Reading, Clerical Checking, and Object Inspection.

Analyses: The scores on IQ and SES were divided into quartiles and four criterion groups were established using the first and fourth quartiles (i.e., Group 1--high intelligence, high SES; Group 2--high intelligence, low SES; etc.). (This design had been used by Jensen.) The two measures of rote learning (Memory for Words and Memory for Sentences) were submitted to the same type of orthogonal analysis of variance design used by Jensen and then analyzed by weighting means by their respective Ns. Differences in means for main effects and for interaction for other TALENT measures (weighted by N) were divided by their standard deviations to provide a statistic which is related to the degree of correlation between each of the dependent measures and the two independent variables and their interaction. For each of the four groups of subjects, results on each of the memory tests were correlated with results on the other 20 TALENT tests. Plots of intelligence and SES, intelligence and interaction, and SES and interaction were made.

Findings: In contrast to Jensen's findings, both IQ and SES were positively correlated with rote-memory scores, and there was little interaction. Correlations between the rote-memory measures and the other ability variables showed very little variability around very modest levels of correlations in the four criterion groups, which also was contrary to Jensen's findings. It was suggested that there were two errors in Jensen's experimental design that would account for his findings: (1) he had used correlated variables in an orthogonal analysis of variance design without knowing the sizes of the populations from which he had sampled, and (2) Jensen's sample of low-IQ/high-SES children in special classes in public schools probably constituted a biased sample of all such children.

Related Publications

Jensen, Arthur R. Jensen's theory of intelligence: A reply. *Journal of Educational Psychology*, *60*(6), 1969, 427-431.

Humphreys, Lloyd G., & Dachler, Hans Peter. Jensen's theory of intelligence: A rebuttal. *Journal of Educational Psychology*, *60*(6), 1969, 432-433. (81753)

Fischbach, Thomas J., & Walberg, Herbert J. Weighted and unweighted means for estimation: A note on the Humphreys-Dachler and Jensen papers. *Journal of Educational Psychology*, *62*(1), February 1971, 79-80.

Humphreys, Lloyd G., & Fleishman, Allen. Pseudo-orthogonal and other analysis of variance designs involving individual differences variables. *Journal of Educational Psychology*, in press as of October 1973. (81753)

Humphreys, Lloyd G. The misleading aptitude-achievement distinction. (Mimeo) (81753)

Humphreys, Lloyd G., & Taber, Thomas. Ability factors as a function of advantaged and disadvantaged groups. *Journal of Educational Measurement*, *10*(2), Summer 1973, 107-115. (81753)

67. Humphreys, Lloyd G.; Lin, Pang-Chieh; & Fleishman, Allen. The sex by race interaction in cognitive measures. (Mimeo) (95106)

Purpose: to extend Jensen's (1971) research in which race x sex interactions were found for employment, income, and education.

Data Used: The sample included all TALENT students who had attended all-white or all-black high schools. (This measure was used as a substitute for information on race of individual students, which TALENT was prohibited by law from collecting in 1960.) The dependent variables included 80 cognitive measures (a few interest and personality scores were also requested from Project TALENT). The independent variables included sex, year in high school, SES (for white schools only), and region of the United States (South or non-South).

Analyses: Blacks in all-black schools were assumed to be low SES and were not dichotomized on SES. Whites were dichotomized into a low and high SES group, with the size of the low SES white sample matching the total number of black students. For 24 groups defined by the variables SES, race, South/non-South, and high school freshman/sophomore versus junior/senior, Ns, means, and standard deviations were provided. Four comparisons were made: (1) blacks versus low SES whites, (2) blacks versus all whites, (3) blacks and low SES whites versus high SES whites, and (4) low versus high SES whites. Means and standard deviations on all cognitive measures were transformed to correct for heterogeneity of variance in the raw scores.

Findings: The results of the study supported Jensen's finding that black women were able to compete more successfully with white women in the most "masculine" occupations than black men were with white men. In other respects there were discrepancies between the two studies. In the study by Humphreys et al., race by sex interactions were largest when SES was controlled and were highly related to the size of the main effect of sex as well. White boys and girls differed more than black boys and girls whether the overall sex difference favored males or females. Sex by grade and, to a lesser extent, sex by region of United States interactions were also moderately large and consistent with the size of the main (sex) effect. Since there were not consistent relationships with other main effects, and since the measures producing the sex differences also tended to produce the interactions, it was concluded that sex differences and the interactions with sex shared the same causes. The authors suggested that the race x sex interactions were due to sex role expectations and would change as these expectations changed.

68. Hutchinson, Thomas E. Level of aspiration and statistical models applicable to the problem of refining choice bases for career development: Logic with implications. Ed.D. thesis, Harvard University, 1969. (T-58)

Sponsor: The research was supported in part by grants from the National Institute of Mental Health and the U.S. Office of Education.

Purpose: to propose and demonstrate a statistical classification model for refining choice bases for career development, and to develop a prototype career self-classification information system based upon the model. The research was part of Harvard's effort to develop an "Information System for Vocational Decisions"--a comprehensive computerized system of vocational guidance.

Data Used: TALENT data on 12th graders were used to develop a prototype vocational guidance system. The sample from Project TALENT consisted of persons who had responded on the 12th grade five-year follow-up that they were employed in one of five vocational groups: sales workers, clerical workers, electricians, general laborers, or structural workers (such as plumbers or carpenters). The variables requested from Project TALENT were sex, scores on four TALENT ability tests (Mechanical Reasoning, Visualization in Two Dimensions, Creativity, and Clerical Checking), and (from the follow-up) occupation, weekly salary, and hours worked per week.

Analyses: In the first phase of the study (in which TALENT data were not used), a career choice model was developed to take into account the dimensions of job satisfaction important to the counselee. Cutting points were to be specified by the counselee to show lowest level of each job satisfaction factor that he would find acceptable in a job. As pointed out by the author, it would be a major undertaking to find out all the dimensions of job satisfaction that counselees might possibly find important; he suggested that both multiple-choice and open-ended questionnaires be given to different samples of subjects to collect as many dimensions as possible. For the present study, only a few dimensions were used.

To demonstrate the way in which the vocational guidance system would be developed, data were obtained from a 1963 survey in which the public schools in Newton, Massachusetts had asked their graduates about occupational experiences. Job satisfaction was measured by weekly and hourly salary and number of hours worked per week; occupations were classified by the D.O.T. system, and SAT scores and Otis IQ scores were used to predict success in the occupations. Different sets of job satisfaction cutting points were constructed for hypothetical subjects who were assumed to have identical test scores, and centour analysis was used to compare the hypothetical subjects' test scores and job satisfaction cutting points to the test scores and actual salaries and hours worked per week of Newton high school graduates in various occupations.

In the second phase of the study, the data requested from Project TALENT were used to construct a prototype vocational guidance system to be field tested on students from a local high school. The 19 students who took part in the field test specified their cutting points on two job satisfaction dimensions (weekly salary and hours worked per week) and took four TALENT tests. Centour analysis was used to compare their test scores and job satisfaction cutting points with the test scores and actual weekly salaries and hours worked per week of TALENT participants who had entered one of five occupational groups. If a field test subject's test scores and job satisfaction standards were similar to the test scores, weekly salaries and hours worked per week of TALENT participants in one of the five occupational groups, he was considered to have a good chance of success in occupations in that group. (To increase the likelihood that the field test participants would resemble TALENT participants in one of the five vocational groups used in the study, they were chosen from students who did not plan to attend college.) Results of their computerized guidance sessions were discussed with the field test participants.

Findings: The average amount of computer time used by the counselees in the field test seemed to indicate that the model would be cost-effective. The counselees seemed to understand the results of their computer sessions as explained to them. Suggestions were made for further development of the system.

69. Hynes, Kevin, Richardson, William B., & Asher, William. Project TALENT revisited: Cross-validating self-report measures of leadership. Article accepted (as of 3/78) for publication in Journal of Experimental Education. (95120)

Purpose: to examine the internal consistency of the self-report measures of leadership used in Project TALENT.

Data Used: The sample consisted of men and women tested by Project TALENT in 1960 as 12th graders who were members of the 4% sample of participants for whom Project TALENT had retained complete item response data. The 13 variables chosen as predictive of leadership included 7 personality variables; scores on Reading Comprehension, Creativity, Abstract Reasoning, and Arithmetic Reasoning; interest in business management; and the TALENT SES composite.

Analyses: Two leadership criteria were used in the study. Leadership I consisted of 5 self-report personality items: I am the leader in my group, I am influential, I have held a lot of elected offices, people naturally follow my lead, and I like to make decisions, scored on a five-point scale according to how well the student thought the item described him. Leadership II consisted of 5 SIB items on (1) activeness in school newspaper, in debating, dramatics, and music clubs, in church, and in non-school youth organizations, and (2) number of times president or officer of an organization. Correlation and multiple regression analyses were performed, and the internal consistency reliability of Leadership I and II was estimated using coefficient alpha.

Findings: The high school leader may be characterized as self-confident, mature, of high SES, interested in business management, socially sensitive, and full of vigor. Cognitive abilities did not seem to be important predictors of the high school leader. Leadership I and II correlated significantly with one another, indicating a high degree of relationship between a relatively objective biographical measure of leadership and a less objective measure based on self-reported personality traits.

70. Inbar, Michael. *The vulnerable age phenomenon*. (Social Science Frontiers, Occasional Publications reviewing new fields for social science development) New York: Russell Sage Foundation, 1976. (95126)

Sponsor: The study was carried out when Inbar was a Visiting Scholar at Russell Sage Foundation.

Purpose: A 1976 study by Inbar and Adler of school achievement of children of immigrants to Israel had yielded the unexpected finding that children who were below age 14 at the time of parents' immigration were less likely to enter college than those who were above 14. This finding was unexpected because young children learn a new language faster and also because the sociological literature had assumed an inverse relationship between age upon immigration and school achievement. The Project TALENT study was conducted to determine whether Inbar and Adler's findings could be replicated with North American data on migrants *within* a country, and whether the finding would be replicated when controlling for possible artifacts.

Data Used: One replication was carried out with data on immigrants to Canada from the Canadian 1971 census. Another replication used Project TALENT data. The TALENT *sample* used was 11-year follow-up respondents who were 10th, 11th, or 12th graders in 1960 (the 9th grade 11-year follow-up had not been completed at the time of the Inbar study). Project TALENT weights were used to make the sample nationally representative. The dependent *variable* was number of years of schooling (from the 5- and 11-year follow-ups); the independent variable was intercommunity migration (from the SIB question "How long have you lived in this community?").

Analyses: Population of previous community of residence was found by manually going through the Rand McNally atlas. The communities were divided into four categories by population: under 2500, 2500-25,000, 25,000-100,000, and over 100,000. The United States was also divided into six regions based on SIB224. Project TALENT provided a crosstabulation that included the following information: length of residence in present community x socioeconomic status x whether population of present community was in the same one of the four size categories as the population of the previous community x whether the region of the country in which present school was located was the same as region for previous school.

Findings: The Project TALENT data consistently supported the notion of a "vulnerable age" between 6-12 years old. Those who had moved from one region of the United States to another during this age span showed a larger "vulnerable age" effect--i.e., less often went to college--than those who had moved only within a region.

However, the average level of schooling for those who had not moved at all was consistently lower than that of the migrants. In the Canadian study the "vulnerable age" phenomenon appeared to be restricted to boys; in the TALENT study the effect was found for both sexes but more consistently for boys.

71. Jencks, Christopher; Smith, Marshall; Acland, Henry; Bane, Mary Jo; Cohen, David; Gintis, Herbert; Heyns, Barbara; & Michelson, Stephan. *Inequality: A reassessment of the effect of family and schooling in America*. New York: Basic Books, 1972. (81755)

Purpose: Three of the authors (Jencks, Smith, and Cohen), convinced that the policy implications of James Coleman's Equality of Educational Opportunity Survey and other analogous bodies of data needed more exploration, established the Center for Educational Policy Research at Harvard University in 1968. This book summarizes the results of three years of research at the Center. A definition of social inequality is offered, and data are presented on inequality in schools, in cognitive skills, in educational attainment. in occupational status, and in income.

Data Used: Several data bases were used including the Coleman Equality of Educational Opportunity Survey, Project TALENT, and Census Bureau studies of social mobility and income distribution. There were two TALENT samples. The first consisted of 5,000 retest students in 91 predominantly white comprehensive high schools. The second was Lyle Schoenfeldt's twin sample. (See A73 in this bibliography for a description of how the twin sample was drawn.) Schoenfeldt had determined, for this sample, the heritability for five factor scores.* The *variables* came from the TALENT tests of Vocabulary, Social Studies Information, Reading Comprehension, Abstract Reasoning, Mathematics, and Arithmetic Computation and from five-year follow-up data on amount of education obtained and employment.

Analyses: School means were calculated for the retest sample. The retest data were combined with data prepared by Samuel Bowles of Harvard in an earlier TALENT Data Bank study and with one-year follow-up data. Data were added for students who were tested either in 9th grade or in 12th grade (retest) but did not have data for both testings.

Findings: *Differences between schools*--9th grade scores predicted 12th grade scores in cognitive attainment. Rate of cognitive growth from 9th to 12th grade was negligibly influenced by differences among schools. Lack of correlation between mean achievement scores in 9th grade and rate of cognitive growth in high school led to the conclusion that high-aptitude students were no more likely than others to attend high schools that were unusually effective in boosting test scores. Effects of school resources: students in affluent high schools gained no more from 9th to 12th grade than students in impoverished high schools. No school resource that could be directly controlled by legislators, school boards, and administrators (such as physical facilities, libraries, homework assignments, tracking, personnel, salaries) showed any consistent relationship to schools' effectiveness in boosting student achievement. Effects of desegregation: white high school students' cognitive scores were not affected by the racial, socioeconomic, or academic characteristics of their high school student body. Effects of tracking: high school curriculum track had virtually no effect on rate of cognitive growth in high school. Effects of school quality on educational attainment: differences in educational attainment were greater within the same high school than between high schools. Differences between high schools could largely be explained by characteristics of their entering students. Effects of high school resources: amount of post-high school education obtained was inversely related to affluence of high school attended (the authors suggest that the 91 TALENT schools were atypical; similar results were not obtained from the EEOS data base). The only single school policy or resource that had a significant positive relation to amount of education obtained was length of school day. Effects of segregation on educational attainment: both economic and racial segregation were discussed. TALENT students with comparable 9th grade test scores, aspirations, and SES were less likely to attend college if they attended middle-class high schools than if they attended working class schools. The authors suggest that this is a chance effect and theorize that the true situation is that attending high school with high-aspiring classmates increases aspirations, but if these classmates are also high-achieving, the competition decreases likelihood of actual college attendance. Data on racial segregation came from the Coleman Equality of Opportunity Study. Effects of curriculum placement: about 60% of the TALENT 9th graders who were in college prep curriculums entered college compared to 18% in other curriculums; however, the college prep students also had higher grades, test scores, and educational aspirations. The authors concluded that about 12% of the difference could actually be explained by high school curriculum.

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* Schoenfeldt, Lyle. Hereditary-environmental components of the Project TALENT two-day test battery. *Measurement and Evaluation in Guidance*, *1*, Summer 1968, 130-140. Unpublished tables compiled by Schoenfeldt on heritabilities, for Project TALENT twins, of TALENT scores on Vocabulary, Social Studies, Mathematics, and Information, and composites for IQ, general academic aptitude, verbal, quantitative, and mechanical-technical aptitude are reported in Appendix A of *Inequality*.

72. Jencks, Christopher S., & Brown, Marsha D. Effects of high schools on their students. Harvard Educational Review, 45(3), August 1975. (95104)

Sponsor: The study, conducted by the Harvard Center for Educational Policy Research, was sponsored by Carnegie Corporation of New York.

Purpose: Previous studies of school effects had not all used the same outcome measures, measures of student characteristics, or statistical methods and had covered different cities and states. This study attempts to resolve these inconsistencies by using a variety of measures and statistical methods and a nationwide sample.

Data Used: The main data base used was Project TALENT; data from the Coleman Equality of Educational Opportunity survey was used to cross-check the TALENT findings. The TALENT sample consisted of retest students who had either one- or five-year follow-up data. High schools with over 25% black students were eliminated to avoid confusion arising from the lack of race data on the retest and one-year samples. The variables were sex, race, SES, number of siblings, high school curriculum, level of education expected in 1960 and 1963, high school grades, test scores in Vocabulary, Social Studies Information, Reading Comprehension, Abstract Reasoning, Arithmetic Reasoning, and Arithmetic Computation, and career plan at five-year follow-up.

Analyses: The variable "ultimate level of education" was projected on the basis of level attained at five-year follow-up. The Duncan Occupational Prestige score was estimated for each respondent's occupation or career plan at five-year follow-up (excluding housewives). The overall strategy was to predict what would happen to each student in the sample if he or she attended the "typical" school in the sample, to compare each student's predicted score to his or her actual score, and to ask whether the apparent effects of experiences between ninth and twelfth grades varied systematically from school to school. Any discrepancy between predicted and actual score would be due either to measurement errors or to experiences between 9th and 12th grades. The analyses used included a technique similar to analysis of covariance; for some analyses, a dummy variable for each school was entered into the regression equations to correct for bias arising from correlation of 9th grade characteristics with school quality.

Findings: Cognitive gains from 9th to 12th grade were very small. The best predictor of a student's score on a 12th grade test was his or her score on the analogous 9th grade test. SES and number of siblings had no significant effect on cognitive gains, but college prep versus other high school curriculum had a small but consistent effect. The best predictor of educational status one year after high school was 9th grade educational plans. At the five-year follow-up, academic ability seemed to have more effect on men's than women's occupational status, and academic ability had more effect on women's career plans than on their actual occupations. High schools that were unusually effective in boosting performance on one test were only marginally effective in boosting performance on other tests, and high schools that were unusually effective in boosting test scores in all subjects were no more effective than average in getting students to finish high school, attend college, graduate from college, or enter high-status occupations.

73. Jencks, Christopher, & Brown, Marsha. Genes and social stratification: A methodological exploration with illustrative data. Chapter 6 in Taubman, Paul (Ed.), Kinometrics: Determinants of socioeconomic success within and between families. North-Holland Publishing Company, 1977. (95107)

Sponsor: Carnegie Corporation of New York

Purpose: Project TALENT data on twins and siblings was used to estimate correlations between genotype and the traits of test performance, educational attainment, and career plans. The authors argue that the critical question is not how much variance genes can explain in a given outcome, but how they explain it. Genes could affect an outcome by providing the basis for race discrimination or by affecting the body's ability to metabolize sugar; thus, if kinship research is to yield useful results, it will require causal modeling. The authors attempt to illustrate this approach using TALENT data.

Data Used: Two TALENT samples were used: the sample drawn by Lyle Schoenfeldt for his twin study and a TALENT sibling sample drawn by Jencks. Schoenfeldt's twin sample was obtained by visually scanning the list of self-reported TALENT twins and eliminating all individuals for whom there was not a TALENT respondent in the same school with the same last name, address, and birthdate. This procedure eliminated 4/5 of the self-repoted twins, leaving 1,959 pairs (1% of the TALENT sample). 448 of these remaining pairs were opposite sex; Schoenfeldt sent the same-sex twins a questionnaire designed to determine their zygosity. 616 pairs responded, giving a total of 1,064 pairs with known zygosity. Of these, 330 pairs had complete data for Jencks's purposes and formed his twin sample. The sibling sample was drawn by Jencks from 98 TALENT high schools and included all students who were enrolled in the same school, had the same last name, listed parents with the same first name, and had five-year follow-up data. 867 pairs of siblings constituted this sample. The variables used included academic achievement composite, years of school completed at five-year follow-up, and career plans at five-year follow-up.

Analyses: Tables of means, standard deviations and correlations among variables were constructed. Since raw scores increase with age but aptitude was assumed not to, the researchers standardized all scores by age by regressing the raw scores on age. They then transformed the resulting aptitude scores so that they would have a mean of approximately 100 and a standard deviation of approximately 10 in the full TALENT sample. The occupational categories used by TALENT for reporting career plan responses to the five-year follow-up were matched to census categories and assigned a score based on characteristics of males in a given occupation. A formula was developed for estimating the genotypic variance of test scores, educational attainment, and career plans.

Findings: A male respondent's educational attainment was higher if he had a male sibling and higher yet if he had an identical male twin; this finding suggested that twins influence one another's educational attainment. Test scores only explained about 30% of the variance in educational attainment, implying that genes have an appreciable direct effect on educational attainment independent of test scores. The authors warn that given the questionable assumptions they had to make for extracting information from twin samples, the conclusions should be treated with caution.

74. Kamens, David H. The effects of college on student dropout. Final Report. August 1972. (88864)

Sponsor: U.S. Office of Education

Purpose: to determine whether variations in college organizational structures have differential effects on students' chances of college graduation.

Data Used: The sample of Project TALENT participants consisted of 12th graders with one- and five-year follow-up data who entered a four-year accredited college in 1960. The variables included data on students' educational plans, occupational expectations, satisfaction with college as college freshmen, their college graduation status five years after high school, their general academic ability, high school grades, socioeconomic status, high school educational plans and aspirations, religion, and certainty of occupational choice. Data on college characteristics and other student characteristics came from non-TALENT sources.

Analyses: The procedures used were crosstabulation and multiple regression.

Findings: The general level of educational resources had no impact on graduation chances, independent of characteristics of students. Amount of faculty attention had a small positive effect on men's graduation rates and a small negative impact on women's graduation rates from the same college, but faculty attention increased women's likelihood of obtaining a baccalaureate degree from another institution in five years. Size of college had no consistent impact on graduation chances; size may have had a small negative effect on graduation chances of low ability students, and a small positive influence for middle and upper ability students. Number of undergraduate majors had a small negative impact on graduation. Mean hours per school spent in extracurricular organizations per week had a small impact on graduation chances.

75. Kapel, David E. Effects of Negro density on student variables and the post-high school adjustment of male Negroes. Interim Report. American Institutes for Research, 1968.

Although no questions on ethnic group were included in the 1960 TALENT battery because of legal restrictions, one was included in the five-year follow-up survey. This report focuses on black males responding to the five-year survey, studying the effects of percentage of blacks in the high school attended, region of the United States (Northeast-Midwest or Southeast) in which high school was located, and type of community (urban/rural) on post-high school job stability, job satisfaction, increase in earning power, and post-high school education. The study found that region of the United States was the factor that had the most influence on post-high school adjustment; percentage of blacks in the students' high school did not seem to have much effect. The findings must be taken with caution for several reasons. First, the sample was much smaller than it should have been (only 399 black males returned the five-year questionnaire, whereas 4,200 of the respondents would have been expected to have been black males based on the 39% overall response rate to the five-year questionnaire). Second, those black males who did return the five-year questionnaire were a biased sample; for instance, 41% had attended college, far above the average for black males in the United States. Lastly, some of the intended comparison groups (for instance, desegregated schools in the South; rural blacks from the Northeast and Midwest) had so few members that they could not be used in the study.

Related Publications

Kapel, David E. Environmental factors, student variables, post-high school employment adjustment, and post-high school education of male Negroes from the Project TALENT sample. Paper presented at the meetings of the American Educational Research Association, Los Angeles, February 1969. (ED 027 888)

76. Kenny, Lawrence W. The production of cognitive skills. Forthcoming as a chapter in Da Vanzo, Julie, & Simon, Julian (Eds.). Research in Population Economics, Vol. II, to be published by JAI Press. (Based on Ph.D. dissertation) (95118)

Sponsors: National Institute of Mental Health; United States Public Health Services

Purpose: This paper focuses on two topics related to the production of cognitive achievement: (1) the importance of student time, and (2) the magnitude of biases in the usual ordinary-least-squares estimates of production parameters.

Data Used: The sample consisted of TALENT 12th grade males with complete 1960 and 1-, 5-, and 11-year follow-up data. Data were provided on the following variables: (1960) TALENT composites for verbal, mathematical, and technical aptitude; ability scores on Reading Comprehension and Creativity; information scores on Home Economics and Social Studies; SIB questions on number of school changes, absenteeism, hours spent studying, number of jobs held by father, time mother spent working, family income, parents' occupation and education, who was head of the household, number of siblings and ordinal position in family, health; and GSC questions on grade levels included in the school, class periods, length of class period, class size, age of building, ability groupings, teachers, community, and per-pupil expenditures. Follow-up data was used in the dissertation but not in this paper.

Analyses: Ordinary least squares (OLS) regressions were performed to estimate the production function for cognitive skills. The dependent variables were the TALENT ability and information scores. The independent variables included, as measures of quantity and quality of time that parents allocate to each child, the parents' labor force participation, number of siblings and parents' education; and as measures of school inputs, the TALENT school variables and the SIB variables on absenteeism, study time, and number of school changes.

The OLS method was believed to lead to bias when some input that was not included in the regressions varied proportionately with an input that was included. In an attempt to eliminate this bias, instrumental variables were created for mother's market time, school size, teacher experience, and weekly hours studying. A regression was performed using the instrumental variable method and its results were compared with the results obtained from the OLS analysis.

Findings: In the ordinary least squares analysis, the following variables increased cognitive achievement: level of parents' education, size of high school student body, percentage of teachers with master's degree, homogeneous ability groupings, length of school year and of class period, and amount of time spent studying. The following variables decreased cognitive achievement: parents' labor force participation, number of siblings, number of older siblings, teacher experience, size of nonscience classes, number of school changes, and days absent from school. In the instrumental variable analysis, the amount of influence of many of the variables changed and father's education, percentage of teachers with master's degrees, and number of school changes did not affect cognitive achievement. The OLS estimates tended to be biased in favor of the importance of parental inputs and teacher quality and to understate the importance of school size, class size, and student time.

Related Publications

Kenny, Lawrence W. The demands for child quality and for educational inputs, the production of child quality, and related topics. Ph.D. dissertation, University of Chicago, 1977. (95118)

Maddala, G. S., & Kenny, Lawrence W. Returns to college education: An investigation of self-selection bias based on the Project TALENT data. Forthcoming in *International Economic Review*. (95118)

77. Kiesling, Herbert J. High school size and cost factors. Final Report. March 1968. (ED 023 290) (T-35, T-54)

Sponsor: U.S. Office of Education

Purpose: to examine relationship of school variables to school quality while controlling for students' intelligence and socioeconomic background.

Data Used: The sample consisted of students from the 775 TALENT public general comprehensive and/or college preparatory high schools. TALENT had performed a complete factor analysis of the scores for a random 10% sample of 9th and 12th graders; only students who had these factor scores were used in the study. The variables included socioeconomic status and GSC items on class size, school size, per-pupil expenditures, starting salaries of teachers, and geographic location and urbanness of the community. Twelve measures were considered for use as measures of school quality: "traditional" tests (English, mathematics, general academic aptitude, and technical aptitude); school facilities and number of courses in the school curriculum; and six factor scores--Verbal Knowledge, English, Mathematics, Visual Reasoning, Perceptual Speed and Accuracy, and Memory.

Analyses: The sample of high schools was stratified according to geographical area, size of senior class, school category, and retention ratio. Weights were assigned such that larger schools would be represented somewhat more frequently than smaller schools. No attempt was made to correct for the sampling ratio differences or for differences in weighting according to region. The factor scores for students were summarized into averages according to grade, high school, and socioeconomic status to form the school observations for the study. Individual pupil records were also used in the analysis. The four "traditional" tests, number of courses in the curriculum, and the factor scores for English and mathematics were used as measures of school performance and size-performance relationships. Multiple regression equations were used in the analysis.

Findings: Considerable variation in performance was explained by expenditure per pupil, controlling for intelligence and SES. Three school characteristics were related to per-pupil expenditure: starting salary of male teachers, and class size in non-science and math courses. Background of classmates appeared to be more important to the progress of children for low SES backgrounds, and school expenditure more important to the progress of children from higher SES backgrounds. School size appeared to be negatively related to student performance. However, within the populations classified both by region and by urbanness, expenditure was rarely related to anything.

78. Krug, Doris N. A study of participants of National Science Foundation Secondary Science Training Programs. Task I: Follow-up of 1960 secondary science training program participants. Final Report. American Institutes for Research, January 1968. (T-24, T-63)

Sponsor: National Science Foundation

Purpose: to evaluate NSF's Secondary Science Training Program by observing trends in educational development of SSTP participants and changes in their educational and career plans and by comparing trends in educational development and career plans of SSTP participants and comparably talented nonparticipants.

Data Used: The two main data sources were TALENT data and a questionnaire sent by NSF to SSTP participants. 1960 results of SSTP participants who were members of the TALENT sample and all other TALENT students in grades 10-12 of the SSTP students' schools were provided for 41 information and ability tests, all the interest inventory scales, and 18 items from the SIB. Data on SSTP participants and matched non-SSTP cohorts were also provided for five-year follow-up items on marital status, high school graduation, employment, career plans, post-high school education, type of college chosen, college credits, major area, grades, and degree planned.

Analyses: The TALENT data was used for comparisons of trends in educational development and career plans of participants and comparably talented non-SSTP participants. Items to be used for matching were to be those that displayed maximum differentiation between SSTP participants and their nonparticipant peers. Each SSTP participant's score on each of the 76 TALENT items was expressed in standard score units based on the mean and variance of his age-grade group within his school. Means of these deviation scores were then calculated for all SSTP participants within each sex-age/grade group. Overall mean deviation scores were ranked and the top seven scores were used in matching cohorts. All seven were information or ability scores, and six of the seven were math or science scores. Each SSTP participant was compared with each member of his sex-grade group within his school, the difference between their standard scores on each of the seven matching criteria was calculated, and the sum of the seven squared difference scores was computed. The cohort selected was composed of the individuals who, in combination with the SSTP participant, produced the smallest sum of squares score. Data on 162 pairs of SSTP participants and nonparticipants were available for comparing trends in educational development and career plans.

Findings: More non-SSTP males were employed full or part time. More SSTP females were employed part time (almost none of the females were employed full time). More SSTP than non-SSTP males chose a career in the fields of math or science. 91% of the SSTPs had attended a four-year college as compared with 77% of the non-SSTPs. Almost none of the sample, either SSTP or non-SSTP, had dropped out of college. 76% of the SSTP males, 62% of the non-SSTP males, 48% of the SSTP females, and 24% of the non-SSTP females majored in a scientific field. SSTPs were superior to non-SSTPs in science grades and overall grade average, and more of the SSTPs planned to earn a higher degree.

79. Lee, Eugene C., & Cooley, William W. Career development of science teachers: A cooperative study with Project TALENT. Journal of Research in Science Teaching, 3, 1965, 300-306. (Unnumbered Data Bank study)

Purpose: to replicate and expand an earlier study, conducted by Lee in 1961, in which 61 male science graduates who continued graduate studies in science were compared with 66 male science graduates who entered graduate programs in science teaching. The 1961 study had not used TALENT data.

Data Used: The sample consisted of TALENT participants who stated on the one-year follow-up that they were in college and had a career plan of mathematician, physical scientist, biologist, engineer, high school math teacher, high school science teacher, or other high school teacher. The variables were TALENT scores on information in Mathematics, Physical Science, and Biological Science; interest in Physical Science, Biological Science, Public Service, Social Service, and Sales; personality scores on Sociability and Social Sensitivity; and ability scores in Creativity, Mechanical Reasoning, Abstract Reasoning, and Mathematics.

Analyses: A discriminant analysis was performed using the 16 variables as predictors of membership in the seven career plan groups.

Findings: The scale that best discriminated between those planning careers in the seven groups was Physical Science Interest.

Related Publications

Lee, Eugene C., & Cooley, W. W. Project TALENT implications for science teacher education. Paper presented to meetings of National Science Teachers Association and Association for the Education of Teachers of Science, Denver, March 25-30, 1965.

80. Lee, Eugene C. Career development of science teachers: A third approximation. Final Report. (T-52)

Purpose: to continue the study of the career development of science teachers (see A79 in this bibliography) adding five-year follow-up data.

Data Used: The sample consisted of all TALENT males with MAP factors data who had indicated in 1960, at the one-year follow-up, or at the five-year follow-up a career choice in one of the following seven groups: mathematician, physical scientist, biologist, engineer, math teacher, science teacher, or high school teacher. Cases with missing data were deleted. The variables, in addition to career choice, were the MAP abilities and motives factors.

Analyses: A discriminant analysis was performed using the 22 MAP factors as predictors of five-year career choice in one of the seven career groups.

Findings: "Interest in things" versus "interest in people" emerged as a determining factor separating scientists from science teachers.

81. Lee, Eugene C. Characteristics and career patterns of scientists and science teachers. Paper presented to the meeting of the National Association for Research in Science Teaching, Minneapolis, March 5-8, 1970. (T-52, T-68)

Sponsor: The research was performed under a grant from the U.S. Office of Education.

Purpose: This report presents results of the five-year discriminant analyses begun in Lee's previous study (see A80 in this bibliograpy) for both males and females and adds results from an analysis of individuals' career patterns.

Data Used: The sample consisted of 12th grade females with MAP factors data who had chosen one of five career groups in 1960 or at the one- or five-year follow-ups. The five female career groups were scientist, elementary school teacher, high school mathematics teacher, high school science teacher, and other high school teacher. Cases with missing data were deleted. The variables were career choice and the MAP abilities and motives factors. TALENT also provided data on each individual's career choice in 1960 and at the one- and five-year follow-ups for use in the "career development" analyses.

Analyses: The 22 MAP factors were used in a discriminant analysis to predict choice, at the five year follow-up, of one of the five female career groups. In the "career development" analysis, individuals' career patterns were studied. Tables were compiled showing the numbers of sample members in each occupational group at each of the three choice points; individual career paths; career plan stability; and composition of 1965 career groups in relation to 1960 and 1961 career plans.

Findings: For males, mathematical ability and social interests discriminated members of the different career groups; for females, math teachers were low on verbal knowledge, scientists and math teachers were high on mathematical ability and science interests, and teachers were high (and scientists were low) on social interest. Female career plans proved to be much more stable than male, particularly when elementary school teacher was included as one of the career groups.

82. Lee, Eugene C. A study of careers in science, mathematics, and teaching. Emory University, August 1974. (95109, T-68, T-52)

Sponsor: The research was conducted under a grant from the Graduate School of Emory University.

Purpose: to further validate Lee's previous research on personality characteristics related to career choice (see A79, A80, A81 in this bibliography), and to chart the career choices indicated by individuals as they moved from high school plans to one-year follow-up to five-year follow-up to 11 years after high school.

Data Used: This publication contains results from the five-year discriminant analyses and career development analyses previously reported by Lee (see A80, A81 in this bibliography). Data on 11-year career choice for the 12th graders, and on 1960, one-, and five-year career choice for 9th, 10th, and 11th graders, were added to the career development analyses.

Analyses: Multiple group discriminant analyses were performed using the MAP factors as predictors of membership in the career groups. Career development analyses were performed for the 12th graders adding 11-year data, and for the 9th, 10th, and 11th graders, who had not been included in the earlier career development analyses.

Findings: The MAP factors that best discriminated between persons choosing the various careers (for both males and females) were mathematics ability, science interest, social interest, and verbal knowledge.

NOTE: See A117 in this bibliography for description of a study continuing Lee's work on the career development of scientists.

83. Levinson, Perry. The next generation: A study of children in families on welfare assistance. Washington, D.C.: American Institutes for Research, 1969. (Originally published as "The next generation: A study of children in AFDC families," in Welfare in Review, 1969, 7(2), 1-9.) (E-19)

Sponsor: Welfare Administration, U.S. Department of Health, Education, and Welfare

Purpose: This was a study of relationships between welfare assistance histories of families and the subsequent school achievement, personality characteristics, interests, and behavior problems of high school students from these families.

Data Used: In addition to Project TALENT data, the data on adolescent problem behavior collected in Cureton's study Early Identification of Behavior Problems (A38 in this bibliography) were used. Additional data were obtained for this study from state and local welfare agencies in the Southern county studied.

Analyses: The names of the Project TALENT participants in the county were matched against family names found in the files of agencies dealing with behavioral problems in adolescents and the two local public assistance agencies. Information was classified according to these criteria: (a) Welfare: (1) whether the family had received welfare, (2) for how long, (3) if they had not been on welfare, whether they had applied; (b) Student Problems: (1) school dropout, (2) juvenile delinquency (police and court records), (3) school discipline problems, (4) dropouts due to teenage marriage, (5) premarital pregnancy; (c) TALENT aptitude and achievement scores (composite). Data were gathered on children of nonwelfare families to check the possibility that some of the variation could be due to working-class status rather than to welfare status. Students from welfare and nonwelfare families were compared within four SES groups: (1) low education, blue collar; (2) low education, white collar; (3) high education, blue collar; (4) high education, white collar. Race and sex were also used as control variables--race because the schools were segregated, and because the police's surveillance and arrest practices could have been different for whites and Negroes; sex because the TALENT measures were related to sex.

Findings: Students from welfare families consistently had more problems than students from families that never applied for assistance. They had more, but only slightly more, problems than students from families denied assistance. The longer the family received assistance, the more likely the children were to have problems, though the differences between short- and long-term families were small. Cautions in regard to the results were:

(1) only one county in the United States had been studied, (2) states differ widely in their welfare systems, (3) the ex post facto nature of the study did not allow comparison of the level at which the family and child were functioning at the time the family applied for assistance nor comparison with other children of like age from families not receiving assistance.

84. Lipe, Dewey. A study of Project TALENT examinees who became airline stewardesses. Interim Report. American Institutes for Research, Pittsburgh, Pennsylvania, December 1966. (GO-2, T-40)

Purpose: to determine characteristics that distinguished Project TALENT participants who became airline stewardesses from those who entered other careers

Data Used: The sample consisted of women tested by Project TALENT in 1960 as 12th graders who reported on the 5-year follow-up that they were working as airline stewardesses. Variables from the 1960 testing included information scales and totals; the tests measuring skills in English and Reading Comprehension; the SAI personality scales; SIB questions on activities, organizational memberships, reading, studying, grades, courses, college and occupational plans, and guidance sought; and the TALENT composites for IQ, general academic aptitude, verbal aptitude, quantitative aptitude, scientific aptitude, and technical aptitude. Five-year follow-up data on jobs, career plans, and value of education were used.

Analyses: Tables were prepared comparing mean scores of the 40 stewardesses with the mean scores for the entire TALENT 12th grade female sample and for the sample of girls expressing interest in careers as airline stewardesses, social workers, or nurses that had been drawn in an earlier phase of the project (see A49 in this bibliography). Within the sample of 40 stewardesses, seven girls who reported that they greatly enjoyed their work and wanted to make a career of it were compared with six moderately satisfied girls who wanted to change careers.

Findings: In comparison with all TALENT 12th grade females, the stewardesses knew more about health, foreign travel, and colors; were more active in artistic and theatrical activities; took more foreign language courses; were more interested in active sports and in activities involving salesmanship; had higher academic aptitude and achievement; were more likely to come from a large family and be the oldest child; and more discussed post-high school plans with father or clergyman. In comparison with the college-bound sample who were interested in careers as stewardesses, social workers, or nurses, the stewardesses had evaluated themselves as less self-confident and less mature; a larger proportion had planned to become secretaries; and they knew less about health, foreign travel, etiquette, and foods. The seven stewardesses who wanted to make a career as airline hostesses had evaluated themselves as less impulsive; had exhibited less knowledge of health, foreign travel, and foods; and had less often attended college or earned a degree than the six who wanted to change careers.

85. Lipe, Dewey. Trait validity of airline stewardess performance ratings. Journal of Applied Psychology, 1970, 54(4), 347-352. (GO-2, T-56)

Purpose: When employees are rated on their performance at several points during their career with a company, the earlier ratings should predict later ratings on the same characteristics (i.e., have "trait validity"). Performance evaluations of airline stewardesses had shown low trait validity. In this study, performance ratings obtained at various decision points in the career of airline stewardesses were correlated with ability and motive scores on the Project TALENT test battery to see if traits could be found in high school that were later reflected in supervisors' ratings of the stewardesses.

Data Used: The sample was 121 stewardesses employed by one major airline who had been Project TALENT participants. The TALENT MAP factors (a set of ability and motives composites based on 1960 data) were used, and the airline supplied information on supervisors' ratings of the stewardesses at three points during their employment.

Analyses: Names of stewardesses who had been in high school in 1960, supplied by the airline, were hand sorted to find the TALENT participants. A table was compiled of intercorrelations between MAP factor scores and airline supervisors' ratings for the TALENT stewardesses.

Findings: The trait validity between MAP scores and supervisors' ratings was low, but some consistent relationships were found that seemed to support the performance rating system used by the airline. The MAP factor scores most related to airline ratings of stewardesses were "knowledge of etiquette" and "sociability." Girls who reported more school-related activities in high school tended to be the ones who terminated their stewardess careers for reasons other than to get married. Shorter length of employment also tended to be associated with "impulsiveness" and "introspection."

Related Publications

Lipe, Dewey. A follow-back study of United Air Lines stewardesses who were participants in Project TALENT. Interim Report. Pittsburgh, Pennsylvania: American Institutes for Research, 1968.

86. Lohnes, P. R. *Measuring adolescent personality*. American Institutes for Research, 1966.

In this study, the 60 TALENT abilities/information tests were reduced to 11 uncorrelated abilities factors and the interest inventory, personality scores, and SIB to 11 motives factors. These MAP factors have been used in numerous TALENT studies--see the Introduction to this bibliography for further description of the MAP factors.

87. Cooley, W. W., & Lohnes, P. R. *Predicting development of young adults*. American Institutes for Research, 1968.

In this study, results of TALENT's 1963 retest were related to the 22 MAP factors. Choice of undergraduate major, college dropout, graduate school attendance, and choice of graduate major were found to be related to the 22 factors. Career plan changers tended to change toward careers more in line with their personal characteristics as measured by the 22 factors.

Related Publications

Lohnes, P. R. A factor theory for the adolescent personality. Paper presented at meetings of American Educational Research Association, February 17, 1967.

88. Love, W. A., Jr., & Stewart, D. K. *Interpreting canonical correlations: Theory and practice*. American Institutes for Research, 1968.

This publication reports a study in which two postdoctoral students working under Paul R. Lohnes, then guidance studies director of Project TALENT, tested their ideas on canonical correlation by correlating scores on a TALENT sociometric test which had been given to students at eight of the participating schools. The test consisted of a list of names of students at the school, from which the student was to choose three of each sex that he liked and three that he disliked. The authors relate the TALENT sociometric scores to Jamrich acceptance/rejection scores and to scores on the 22 MAP factors (see Lohnes, *Measuring Adolescent Personality*).

Related Publications

Horowitz, H. Interpersonal choice in American adolescents. *Psychological Reports*, *19*, 1966, 371-374.

Horowitz, H. Prediction of adolescent popularity and rejection from achievement and interest tests. *Journal of Educational Psychology*, *58*(3), 1967, 170-174.

89. Mathematica, Inc. Enrollment and financial aid models for higher education. Report to U.S. Office of Education, Contract OEC-0-70-4751, August 1971. (ED 058 040) (88863)

Sponsor: Office of Program Planning and Evaluation, U.S. Office of Education

Purpose: to refine a previously developed Enrollment-Student Aid model for higher education. The model would forecast student enrollment in higher education by family income and aptitude groupings, and the enrollment forecast would be used to estimate student financial aid requirements.

Data Used: Data came from several sources, including American Council on Education; Bureau of Applied Social Research, Columbia University; American College Testing Program; Educational Testing Service; Bureau of Higher Education; National Center for Education Statistics; and Project TALENT. For the TALENT analysis, the sample consisted of all 1960 12th graders; the variables were (1960) high school attended, sex, TALENT general academic aptitude composite, and the SIB item on family income; (5-year follow-up) high school graduation and post-high school education.

Analyses: The students were classified by five income and four aptitude groups. Project TALENT provided tables showing raw and weighted frequencies and percentages to estimate the probability that male and female students in particular aptitude and income groups enrolled in college in 1960; enrolled full time, part time, or informally; attained various college levels; and received a bachelor's degree.

Findings: Models were developed for undergraduate and postbaccalaureate enrollment and student aid. TALENT data were used only in the undergraduate models. The enrollment forecast from the model served as an input to a financial aid model where estimates of the parental and student contribution to college expenses were made. These data were then used to estimate the financial aid requirements of undergraduate students. These models were used to project enrollment and student need through 1975-76 and to estimate the costs of alternative Federal aid programs.

90. McDill, Edward L., Meyers, Edmund D., Jr., & Rigsby, Leo C. Institutional effects on the academic behavior of high school students. Sociology of Education, Summer 1967, 40(3). (Pre-T account TALENT Data Bank study)

Sponsor: Cooperative Research Program, U.S. Office of Education

For this study, which assessed the influence of different instructional and social aspects of high schools on student achievement, no data from Project TALENT were used. Permission was given for the use of two TALENT tests--Abstract Reasoning and Math. These tests, which were used as measures of ability, were administered in 20 non-TALENT public coeducational high schools in 1964-65. Non-TALENT questionnaires were also filled out by students and faculty. The study confirmed the findings of other studies that the most powerful predictors of academic performance are SES and intelligence.

Related Publications

McDill, Edward L., Meyers, Edmund D., Jr., & Rigsby, Leo C. Sources of educational climates in high schools. Final Report to U.S. Office of Education, Contract OE-3-10-080, December 1966.

91. McLaughlin, D. H., & Tiedeman, D. V. Eleven-year career stability and change as reflected in Project TALENT data through the Flanagan, Holland, and Roe occupational classification systems. Journal of Vocational Behavior, 5(2), October 1974.

Sponsor: National Institute of Education

Purpose: Any attempt to study career stability depends on the scheme by which occupations are classified into career groups. The purpose of this study was to evaluate the relative stability of three different occupational classification systems over different time intervals (the intervals between the TALENT 1960 testing and one-, five-, and 11-year follow-ups) and to observe the extent to which frequencies of career change conformed to the models underlying the systems.

Data Used: The sample consisted of TALENT 12th grade males with 11-year follow-up data. The variable was career choice in 1960 and at the one-, five-, and 11-year follow-ups.

Analyses: The 34 occupations listed in TALENT's 1960 SIB item on expected career were classified into the Flanagan, Holland, and Roe occupational systems. (The Flanagan system is the one used by Project TALENT in its Career Data Book, A55 in this bibliography.) For each of six time intervals (1960 to one-year follow-up, 1960 to five-year follow-up, 1960 to 11-year follow-up, one-year to five-year follow-up, one-year to 11-year follow-up, and five-year to 11-year follow-up), each individual's earlier career plans were compared with his later plans. The percentage of students who did not vary in career plan from earlier to later observations was computed for each time period for each of the three occupational classification systems--Roe, Holland, and Flanagan.

Findings: All three classification systems showed essentially the same relative levels of career stability across the different time intervals. Career stability decreased as the interval over which it was measured increased; career stability increased as the subjects grew older. In all three systems, career changers tended to move from intellectual careers into careers in business and sales.

92. McLaughlin, Donald H. Career changers: A Project TALENT report. American Institutes for Research, March 1975.

Purpose: to investigate the role of career change in the career development of males.

Data Used: The sample consisted of 13,000 males tested as 12th graders in 1960 who also responded to the TALENT 5- and 11-year follow-ups. The variables included academic aptitude scores, TALENT information test scores, SIB career plan items, and follow-up items on occupation, career plans, and job satisfaction.

Analyses: Characteristics of "career changers" and "persistors" were compared. Career groups that tended to be sources of career changers or targets of career changers were identified.

Findings: Five years out of high school, 65% of the respondents had career plans different from those they expressed in high school. Eleven years out of high school, 47% had jobs in career fields quite different from the plans they had stated in 12th grade and at the five-year follow-up. There were two major tendencies in frequency of career change: (1) some career groups tended to be sources of career changers (i.e., more individuals had plans to be in these careers than actually carried them through) while other career groups tended to be targets of career changes (more individuals had jobs in these fields at 11 years than had planned to earlier); and (2) some career groups tended to be closely paired, with individuals switching between them in both directions more frequently than between other groups. The careers in which persistors had higher mean aptitude scores tended to be sources of career changers. More people changed "downwards" (into less competitive and prestigious careers) than changed "upwards"; the ratio of "upwards" to "downwards" changes was 40/60. Career changers, both "upwards" and "downwards," were found to be changing toward careers that conformed more to their interests as measured in high school. In overall salary and job satisfaction, career changers tended to score lower than persistors. Because the lower ratings of job satisfaction were both in comparison with the changers' source and target careers, the author suggested that the deficit resulted from career change itself.

93. National Commission on the Financing of Postsecondary Education. Financing postsecondary education in the United States. Washington, D.C.: U.S. Government Printing Office, 1973. (95110)

Purpose: In 1970 Congress took up the task of reexamining the federal government's role in financing postsecondary education, with the intention of determining which programs should be continued, expanded, or ended. This reexamination culminated in the passage of the Education Amendments of 1972. One of the provisions of these Amendments was to establish a National Commission on the Financing of Postsecondary Education, which would be charged with studying existing financing programs and recommending new financing methods and policies. Financing Postsecondary Education in the United States is the Commission's report to Congress.

Data Used: Much of the data was taken from existing reports. Among the agencies supplying data were the Carnegie Commission; College Entrance Examination Board; Educational Testing Service; scholarship commissions in five states; Council on Financial Aid to Education; Bureau of the Census; Federal Trade Commission; Office of Management and Budget; National Center for Education Statistics; and Project TALENT. The report also drew on at least one other study which had used Project TALENT data--the report of the Commission on Human Resources and Higher Education (A59 in this bibliography).

For the analysis of TALENT data commissioned for this report, the sample consisted of all participants tested in 1960 as 9th graders who had 1- and 5-year follow-up data. The variables were (1960) sex, grade, TALENT composites for SES and general academic aptitude, and SIB questions on high school curriculum and grades, parents' occupation, student's expected and desired occupation, siblings, parents' education, family income, college expectations and college financing; (follow-up) college attendance, degrees earned/planned, race, religion, career plan.

Analyses: The sample was divided into four groups: high school dropouts, high school graduates with no college, high school graduates with up to two years of college, and high school graduates with any amount of college. Crosstabulations were run separately for males and females. In one analysis, educational and occupational aspirations and behaviors and college financing plans (dependent variables) were predicted by family background, race, religion, educational ability, and high school curriculum (independent variables). In a second analysis, educational ability and high school curriculum were predicted by family background, race, and religion.

Findings: TALENT data were used in a section of Chapter 4 called "Student Access to Higher Education." Findings based on TALENT data included: more than twice as many men and women with 1960 family incomes of $12,000 and above completed two to four years of college compared to those with family incomes below $12,000. Both dropping out of high school and termination of education with high school seemed to account for a large part of this disparity. The factor most closely related to college attendance was taking a college preparatory curriculum in high school. Orientals were the ethnic group with the highest percentage completing two to four years of college, followed by whites, blacks, and American Indians.

94. Nephew, Charles T. Guides for the allocation of school district financial resources. (T-75)

Purpose: The study, conducted by the Western New York School Study Council at SUNY Buffalo, examined fiscal allocation patterns and student performance for 119 school districts in 10 states in an attempt to provide practical guides for the allocation of scarce financial resources.

Data Used: The sample consisted of 19960 12th graders from a list of approximately 150 high schools provided by the Western New York School Study Council. These TALENT schools were chosen to represent districts where decisions from kindergarten through 12th grade were made by a single administrative body. Most of the student variables were used, including TALENT SES composite and scores on the information, interest, ability, and personality measures.

Analyses: School district means were provided for SES and for the MAP abilities and motives factors. Using a linear regression equation, school means on the MAP factors were predicted from the school's mean SES score. The difference (residual) between the school MAP factor means predicted by this equation and the actual means was found, and this residual formed the dependent variable in the analyses. Multiple regression was used to predict the residuals from some GSC variables and from school expenditure information supplied by the Western New York School Study Council. (Note: The GSC variables and school expenditure information are not further described in this brief report.)

Findings: 50% of the variance in the output measures was accounted for by student socioeconomic background. School expenditures, after SES had been accounted for, were found to be related to all 22 of the MAP factors. Of the four MAP factors taken as the key output measures--Verbal Knowledge, English, Math, and Scholasticism--only English did not have a significant multiple correlation with the financial inputs. The financial input judged most likely to improve student performance was increasing teacher salaries.

95. Nimnicht, Glen P. A non-technical report of the assessment and survey of the Rocky Mountain region and the rationale and program of the Rocky Mountain Educational Laboratory, Inc. Final Report, June 1, 1966. (T-22)

Sponsor: This final report was submitted to the Division of Regional Laboratories, Bureau of Research, U.S. Office of Education, under a contract with the Western Interstate Commission on Higher Education, fiscal agent for the Continental Divide Consortium, a group created to develop the concept of a regional laboratory in the Rocky Mountain region.

Purpose: Project TALENT test scores of Rocky Mountain area students were compared with the scores of the TALENT nationwide sample to determine how effectively Rocky Mountain area schools were educating their students.

Data Used: There were two samples for this study. A list of TALENT high schools in the Rocky Mountain area was provided to AIR for the first sample, which was to consist of TALENT schools in the Rocky Mountain states. The comparison sample consisted of all TALENT high schools. The variables included Information I tests and total, English tests and total, Reading Comprehension, Creativity, Visualization in Three Dimensions, Advanced Math, Math Total, Table Reading, and Abstract Reaspmomg/

Analyses: Student information and achievement test score means were provided for the two school samples.

Findings: Rocky Mountain area students had slightly higher means on the Information I tests than did the nationwide sample. The main areas of greater information were physical and biological science, electrical, mechanical, and home economics. Regional means were also higher than national means on achievement tests, although differences were smaller than on information tests. English and math differences were relatively low. The differences in the Project TALENT data for the Rocky Mountain region and the nation were too small to provide clear-cut clues to significant educational problems.

96. Noblitt, Gerald L., & Asher, William. Characteristics of senior high school students who work for pay. Vocational Guidance Quarterly, June 1971, 254-257. (T-67)

Purpose: to describe characteristics of high school seniors who work for pay during the school year.

Data Used: Noblitt used TALENT data obtained for Asher's auto accident study (A3 in this bibliography). The sample consisted of TALENT 12th graders--10% of those who answered "Yes" and 1% of those who answered "No" to the 1-year follow-up question, "Were you the driver in an automobile accident involving bodily injury or more than $100 property damage since June, 1960?" The criterion variable chosen by Noblitt was the SIB question on number of hours worked for pay during the school year. Other variables, selected on the basis of their theoretical relationship with working high school students as described in the literature, included information tests in Literature, Science, Mechanics, and Home Economics; numerous aptitude and achievement tests including language, Creativity, Abstract Reasoning, Visualization in Two and Three Dimensions, Mathematics, and Clerical Checking; and 48 SIB items on educational and vocational plans, parental and personal financial situations, interpersonal relationships, and general health.

Analyses: The data from the boys and girls were analyzed separately using a standard computing program which resulted in two correlational matrices.

Findings: 65% of the boys and 51% of the girls were spending some time during the school year working for pay. (Note that Asher's sample included more persons involved in accidents than not involved, and so was not representative of all 1960 12th graders. However, the TALENT studies reported in The American High School Student also showed a little over half of all high school seniors working for pay.) The profile of the working high school senior boy revealed lower math, science, reading, and English skills. His IQ was lower, and he often reported having a difficult time concentrating while attempting to read. Foreign language courses were of less interest to him. He was likely to be more interested in vocational education than the nonworking high school senior and less interested in college training. He was more likely to have a car for his own use and was likely to date more. The profile of the working high school senior girl indicated that she had taken fewer English classes and also was less interested in further educational opportunities. She was more likely to earn her own spending money, and the more hours she worked, the more concerned she was with saving her money.

97. O'Hair, James Patrick. The achievement process: A path analytic longitudinal study of educational and occupational mobility. Doctoral dissertation, Syracuse University, August 1974. (26553)

Sponsor: The dissertation was funded by the Manpower Administration, U.S. Department of Labor, Office of Research and Development, under the provisions of Title I of the Manpower Development and Training Act.

Purpose: to gain understanding of occupational stratification and mobility in contemporary America

Data Used: The sample consisted of TALENT participants tested in 1960 as 12th graders who responded to the 1- and 5-year follow-up surveys. The variables included (1960) sex, TALENT composites for IQ and SES, and SIB questions on siblings' education, parents' and teachers' educational expectations for student, whether peers expected to attend college, number of siblings, head of household, family income, parents' occupation and education, high school grades, reasons for not going to college, salary expected/acceptable, participation in clubs and athletic teams; (follow-up) marital status, race, occupation, post-high school education, job satisfaction, career plans/steps taken, how well education prepared for job/life/citizenship.

Analyses: Path analysis was employed to build a causal model of the achievement process.

Findings: Social background affected educational and occupational level; IQ affected educational but not occupational level. Respondents who were unmarried five years after high school had higher educational and occupational status. Those who went directly from high school into post-high school education were more often in post-high school education than those who went into a job upon high school graduation. Attainments subsequent to high school appeared to play a greater role in determining career entry than did high school-related accomplishments.

98. Operations Research, Inc. Analytical studies of selected educational data (Vol. I) (ED 057 529) and Supplement: Consultant interpretation of findings (Vol. II) (ED 057 530). Silver Spring, Maryland: ORI, 30 April 1971. (88861, 88865)

Sponsor: Office of Development, U.S. Office of Education

Purpose: This study was one of those performed for a report to Congress required by the Elementary and Secondary Amendments of 1969 (PL 91-230, Title VIII, Section 806). The objectives of the report included defining the gifted and talented, identifying their needs, determining the availability and adequacy of current educational programs for the gifted, and developing a model program and implementation plan.

Data Used: Data came from three sources. (1) A survey of advocates of differentiated education for the gifted, designed and conducted by Operations Research, Inc., provided information on current thinking of leaders in special education on the educational needs of the gifted and responsiveness of the educational system. (2) The National School Staffing Survey, sponsored by USOE and produced by Westat Research, Inc., provided information on the current state of education for the gifted and talented. (3) Project TALENT provided information on the personal, social, and academic development of gifted and average students. TALENT data was only used in Volume I.

The TALENT sample consisted of 1960 12th graders with 5-year follow-up data. One-year data were also used when available for the sample members. The variables requested from Project TALENT included (1960) region of the United States, sex, personality scores (Sociability, Social Sensitivity, Leadership, Self-Confidence, Mature Personality), SIB items on clubs, leadership, hobbies, sports participation, source of spending money, dating, studying, high school curriculum, grades, family income, father's occupation, parents' education, college plans and major expected, occupation expected and desired, career plan, marital and salary expected, reasons for going to college, definiteness of occupational choice, how many occupations considered; (follow-up) post-high school education, job, career plan, job satisfaction, regrets, how well education prepared for job and life.

Analyses: The 2.5% of TALENT 12th graders scoring highest on academic aptitude were defined as the gifted group, and the 2.5% clustering around the mean were defined as the average group. To identify members of these groups, the TALENT general academic aptitude composite was first tried, and later the same tables were run using the IQ composite. Chi-square statistics comparing the two groups were calculated.

Findings: *Family background*: gifted students came from wealthier families and their fathers more often had a college degree. The father's occupation most often cited by average students was clerical worker; by gifted students, technical, professional, or managerial worker. *High school curriculum and grades*: 92% of the gifted students were in a college preparatory curriculum. 80% had above average grades; the area in which the gifted most often received low grades was foreign languages, possibly because they are taught by rote. *Studying*: 38% of the gifted said grades didn't reflect their ability at least half the time. 33% of the gifted lacked interest in schoolwork, 23% said courses wouldn't help in their expected job, and 33% said they didn't try unless they especially liked the course. The apathy percentages, however, were higher for the average students. *Extracurricular activities*: The gifted were more active in clubs and sports and more often held leadership positions. Average students obtained more of their spending money from paid jobs. *Career plans*: Twice as many gifted were undecided on a career, but the gifted had considered more possible careers. *College plans*: Almost all the gifted students planned to attend college. Parental expectations of college for gifted children corresponded with the student's expectations, but tended to be higher than the child's when the student was average. *Post-high school experiences*: 95% of the gifted were in some form of post-high school education at the 1-year follow-up, as compared with 31% of the average who were not in any form of post-high school education. 64% of the gifted went to college because college graduates make more money; the second most frequently cited reason was making good personal contacts. Only 1% of the gifted said they were in college because they enjoyed learning or because their chosen career required a college education. Of those who were in college, 60% of the gifted but only 18% of the average planned graduate work. At the 5-year follow-up, 25% of the gifted females were in clerical jobs such as secretary or typist--50% higher than the number of average females in such jobs. 17% of the gifted were in jobs that didn't use their abilities, including office jobs and skilled worker, and almost all of these planned to leave the job soon.

99. Perl, Lewis J. The role of educational investment and family background in the production and distribution of educational services. Copyright 1970 by Lewis J. Perl. (T-69)

Sponsors: Carnegie Commission for the Future of Higher Education; Institute of Industrial Relations at the University of California, Berkeley; Ford Foundation

Purpose: to investigate (1) whether the relationship between educational attainment and lifetime income reflects the ability of education to increase productive capacity, or whether it simply reflects the association between education and other characteristics of the individual, such as SES or race, that provide an entree to the best-paying jobs; and (2) if education is considered a productive function, why various measures of family background are related to educational attainment.

Data Used: Data came from three sources. Information on college characteristics (including faculty salaries, enrollment, and expenditures) came from the Higher Education General Information Survey conducted by National Center for Education Statistics. 1960 census data were used to determine average earnings of college students. Data on students' family background, abilities, and post-high school experiences came from Project TALENT.

The TALENT sample consisted of males tested as 12th graders in 1960 who had 1- or 5-year follow-up data. For much of the analysis a subsample consisting of every fifth student was used. The sample size was further reduced by restricting the analysis to public schools. The variables on which data were provided by Project TALENT included the following: (1960) information scores on Vocabulary, Literature, Music, Social Studies, Mathematics, Physical Science, Scientific Attitude, and Information II Total; Memory for Sentences, Memory for Words, Disguised Words, English, Word Functions in Sentences, Reading Comprehension, Creativity, Mechanical Reasoning, Visualization in 2 and 3 Dimensions, Abstract Reasoning, Arithmetic Reasoning, Introductory and Advanced High School Math; SIB questions on breadwinner, whether parents worked for pay, whether parents were born in U.S., type of house, family income, home appliances and cars, parents' age/education/occupation/employer, student's expected college major and expected/desired occupation, head of household, number of siblings, rooms in home; and GSC questions on type of school, grades included, accreditation, days in school year, class periods, length of period, class size, accelerated curricula, testing, books in library, age of school buildings, curriculum tracks, number of full-time teachers, percentage of male teachers, teachers' degrees/certification/salaries/experience, student body size, percentage going to college, per-pupil expenditures; (follow-up) race, religion, post-high school education, job, salary, marital status, health, military service, employer, job satisfaction, career plan, and decisions regretted.

Receiving a bachelor's degree 5 years after high school and pursuing graduate studies were taken as the measures of college output. The college input measures were (1) TALENT ability scores, (2) measures of college environment (hours worked for pay, living expenditures, living at home/on campus), (3) college characteristics (average ability of students and the NCES variables) and (4) choice of major, included because it affects probability of attending graduate school. The high school input measures were family background (from SIB questions on family income and father's education), per-pupil expenditures or quality of teaching (see Analyses), and student body SES (the average family income for students at the high school). The high school output measures were the first two principal components of ability (see Analyses).

Analyses: The principal components of the TALENT ability test scores were derived and those components that were found to predict receipt of a bachelor's degree and pursuance of graduate studies were used as measures of student ability. A factor analysis was performed to determine the principal components of the ability tests. The first four principal components, which were arranged in order of value for predicting the two college output measures, measured (respectively) general knowledge/verbal reasoning, abstract reasoning, quantitative ability, and ability to memorize.

The family income variable was constructed by estimating the relationship between response to the SIB family income question and other SIB family background questions using multiple regression analysis on census data. Academic ability of the student body at each college was estimated by averaging the scores of TALENT participants attending the college on the first principal component of ability. (The sample of colleges from the NCES survey was reduced to schools attended by 10 or more TALENT participants in order to assure reliability in estimating average characteristics of the student body.)

Parameters of college-level educational production relating input to output measures were estimated using ordinary least square regression. In estimating the relationship between the high school input and output measures, two separate models were used, one taking per-pupil expenditures as the measure of school resources devoted to the student's educational program, and the other taking as the measure specific components of educational expenditure such as class size, teacher quality, and school facilities.

A system of prices for educational outputs was developed that enabled a comparison of costs and benefits of both high school and college education, as well as a comparison with other social alternatives. For this purpose a model was devised that estimated the effect of educational policies and programs on lifetime earnings, taking into account the cost of education to the student and to society.

Findings: (College Inputs/Outputs) Attainment of a bachelor's degree was found to be predicted by TALENT ability scores, financial support while in college, and student-faculty ratio (a NCES variable) and average ability of students at the college. High school ability scores were more closely related to attainment of a bachelor's degree than to pursuance of graduate studies, which was more closely related to college grades. Living at home decreased chances for attaining a bachelor's degree but increased chances for graduate school attendance. Working for pay during college decreased chances both for four-year graduation and for graduate school attendance.

(High School Inputs/Outputs) Ability test performance was related to family background, student body SES, and some components of school expenditures (teacher salaries, percentage of teachers with graduate degrees, percentage of time teachers spend teaching in their area of specialization, class size, and length of school year).

Related Publications

Perl, Lewis J. Family background, secondary school expenditure, and student ability. (Mimeo in TALENT Data Bank file) (T-69)

100. Porter, James N. On making it: Race, socialization and mobility in educational and early occupational attainment. Ph.D. thesis, Duke University (date not given). (81756)

Purpose: to discover which experiences and factors in young people's development lead to inter- and intragenerational continuity and discontinuity of position in the social system.

Data Used: The sample for Porter's paper was black and white men tested by Project TALENT in 1960 as 12th graders who had 5-year follow-up data. The variables requested from Project TALENT included (1960) TALENT composites for SES, IQ, general academic aptitude, verbal aptitude, quantitative aptitude, technical aptitude, and scientific aptitude; scores on Information and English Totals, Math Information, Creativity, and Abstract Reasoning; the ten personality scores; SIB items on school changes, high school grades, discussing plans with parents, parents active in PTA, length of residence in community, type of prior community, family income and finances, books/magazines in home, whether student had own room/desk/ typewriter, siblings' college, parents' occupation/age/education, who was head of household, student's expected/desired occupation, number of siblings/older siblings/people in home, expected salary, amount of education expected by student, by parents for student, by peers; and GSC data on promotion of slow learners, number of students in each grade, percentages who appeared before juvenile courts, dropped out of high school, went to college, and went to junior college, and age of housing in the community; (1- and five-year follow-up) graduation from high school, post high school education, job, job satisfaction, salary, career plan, marital status, military duty, race, religion, and how well education prepared the individual for occupation/life/citizenship.

Analyses: Path analytic techniques were used to examine intergenerational mobility. Causal models for each race were developed to show how factors of the socialization process contributed to understanding how socioeconomic origin is related to educational and occupational attainment.

Findings: For both whites and blacks intelligence was the most important factor influencing mobility, with education also important. There were several racial differences in the results. The results for whites were described by the author as similar to those expected on the basis of previous research. For blacks, however, education and intelligence had a greater effect on occupational level than for whites; high school grades were unrelated to intelligence and had no direct effect upon educational attainment; ambition had no direct effect on occupation and was unaffected by peer and parental encouragement; family SES had no direct effect on educational attainment or on peer and parental encouragement; and a conformist self-concept had a positive effect on educational level but a negative effect on occupational level. These findings were interpreted as suggesting that occupational discrimination against blacks had lessened since 1960; that blacks were selected to receive post high school education more on the basis of intelligence and conforming personality than on the basis of academic achievement; and that while occupational mobility for whites approximated a competitive process, for blacks it approximated a system of mobility by sponsorship.

101. Prediger, Dale J. New procedures for scoring psychological measurements: Development of moderated scoring keys for psychological inventories. Final Report. Toledo, Ohio: University of Toledo, February 1968. (ED 023 123) (T-26)

Sponsor: U.S. Office of Education, Bureau of Research

Purpose: Biographical inventories such as the SIB are not as easy to score as tests because the responses cannot be judged against a criterion of "correctness." The overall predictive validity of an inventory can be increased when separate scoring keys are developed for different groups on an appropriate moderator variable. In this study, Prediger planned to refine the moderated scoring key approach by developing a method for determining the optimum number of subgroups for a given inventory and by finding a way to develop a single scale for reporting the scores obtained from the separate keys.

Data Used: The sample consisted of 12th grade males who took the TALENT tests in 1960 and responded to the 1-year follow-up. All those with missing data were eliminated from the sample. No weighting was used since it was not planned to generalize the findings to the total U.S. population. The variables were six ability scores: Vocabulary (R172), English Total, Reading Comprehension, Abstract Reasoning, Arithmetic Computation, and the total of Math I+II; all the SIB items that were considered "biographical" (the items on study habits and post-high school plans were not used); and 1-year responses on high school graduation, college attendance, whether still in college, and college attended.

Analyses: Of the six ability variables, Reading Comprehension and Math I+II were the ones most correlated with college entry, the criterion variable. These two ability variables were combined by the use of linear standard scores to form the moderator variable (that is, the variable that would be used to differentiate individuals for whom the biographical items predicted college attendance more or less accurately). Percentages attending college at various ability levels were found, and the effect on criterion group size of various numbers of ability level groups was determined. Since the total group was to be split into four random subgroups, the membership of any ability level group based on 1/4 the total sample had to be large enough. 12 subgroups were found to be the optimal number; 22 keys had to be developed since subanalyses were to be performed.

Findings: The investigators were able (1) to develop workable and economically feasible procedures for determining the optimum number of subgroups (and hence, moderated scoring keys) required for maximizing the predictive effectiveness of an inventory and (2) to develop a single scale for reporting the scores obtained from the set of moderated scoring keys. Membership in the criterion group (college attenders) was the basis on which the single scale was developed. The moderated scoring key approach was as good as but no better than two other possible methods for scoring biographical inventories. The author suggested that moderated scoring keys might have been more effective if some moderator variable other than ability scores had been chosen. As a by-product of the study, biographical data were shown to be better predictors of college attendance than ability scores.

Related Publications

Prediger, Dale J. Biographical data differentiating college attenders and nonattenders at various ability levels. Paper presented at the meeting of the American Personnel and Guidance Association, 1969. (ED 031 742) (T-26)

102. Quirk, Thomas J. The use of twelfth grade TALENT data to predict occupational activities five years after high school graduation. Paper presented at the meetings of the American Psychological Association, Washington, D.C., 1969.

Sponsor: U.S. Office of Education

Purpose: to determine the degree of correspondence between test results and later realization of career plans

Data Used: The sample consisted of 14,125 males and 14,703 females who reported specific career plans as 12th graders in 1960 and were making reasonable progress toward attaining such plans either by holding a job or by participating in a program to train for the planned career at the time of the five-year follow-up. The variables included 1960 ability test scores and career plan, and five-year follow-up occupation and education questions.

Analyses: Occupations were grouped into seven major categories according to the stringency of their entry requirements or specialized route of preparation. Correlations were computed separately for males and females between 17 selected TALENT variables and membership in the occupational group for each of the selected career plan groups.

Findings: Career plan groups that could be predicted moderately well for males included chemist, engineer, architect, lawyer, college or university teacher, music teacher, carpenter, farmer, electrical or electronic engineer, and auto mechanic. Career plans that could be predicted moderately well for females included high school math or science teacher, college or university teacher, salesclerk, and hairdresser.

103. Rees, Matilda B. A comparison of cross-lagged, path, and multivariate causal inference techniques applied to interest, information, and aspiration among high school students. Ph.D. thesis, Northwestern University, June 1971. (81763)

Sponsor: The research was supported in part by a National Science Foundation grant.

Purpose: Project TALENT data were used to test the usefulness of three causal inference techniques--the Campbell cross-lagged approach, the Heise path coefficient approach, and a new technique that combined multivariate procedures and the lagging of variables concepts.

Data Used: The *sample* consisted of 500 persons tested by Project TALENT in 1960 as 9th graders and retested in 1963 as 12th graders. Sample members had to have taken Retest Battery A since it included all the variables needed, and they had to have complete data on all the variables. The *variables* (measured both in 1960 and 1963, except for SES) were sex, SES composite, expected educational level, high school curriculum track, Vocabulary, and information about and interest in Literature, Music, and Art.

Analyses: Indexes of information, interests, and aspirations were created from the TALENT variables. These constructs, sex, and the TALENT SES composite comprised the causal system investigated in the study. A *preanalysis* conducted on the raw data included the following steps: inspecting histograms, correlating variables, transforming non-normal distributions, computing transformed correlations, comparing and choosing between transformed and untransformed variables, inspecting the scatterplots, and computing *eta*. A *mid-analysis* was next performed, including these steps: computing factor analysis (with data being rejected if single-factored), constructing indexes, extracting third-variable covariance, computing residuals, and correlating residualized indexes. The *post-analysis* included these steps: computing partial correlations, partitioning for specification, and computing multiple correlation if appropriate.

Findings: The technique developed was believed to contribute to solution of some of the problems inherent in causal inference procedures.

104. Research for Better Schools, Inc. Final report of the Middle Atlantic Regional Laboratory. April 30, 1966. (T-19)

Sponsor: Division of Regional Laboratories, Bureau of Research, U.S. Office of Education

Purpose: Under Title IV of the Elementary and Secondary Education Act, regional educational laboratories were established to conduct educational research, provide facilities and training for researchers, translate the findings into educational practices, and publicize innovative educational programs and practices. This report describes the creation of the Middle Atlantic Regional Laboratory and plans for its future activities. TALENT data were used in a small section of the report for comparing characteristics of students and schools in the region served by the laboratory to the nationwide TALENT sample.

Data Used: The sample consisted of TALENT 9th and 12th graders in 30 schools in Delaware, New Jersey, and Pennsylvania. School means were provided on 22 ability variables including Memory for Sentences, Memory for Words, Disguised Words, English subtests and total, Word Functions, Reading Comprehension, Creativity, Visualization in Two and Three Dimensions, Abstract Reasoning, Math I, II, III and subtotals, Arithmetic Computation, and Table Reading. The entire set of GSC variables were used.

Analyses: Characteristics of students and schools in the Middle Atlantic region were compared to TALENT's nationwide sample.

Findings: The data suggested that the Middle Atlantic region reflected typical student performance for the nation. No clear-cut problems or issues related to education in the Middle Atlantic region emerged from the analyses.

105. Richards, James M., Jr. Who studies what major in college? Paper presented at meetings of the American Psychological Association, September 3, 1970. (ED 045 033)

This paper presents an analysis and results of the TALENT 1960 SIB and the one- and five-year follow-ups in regard to anticipated and actual college majors. Tables are presented indicating the fields included in various categories of college majors; percentage of the 12th grade sample choosing various college majors at various times; multiple correlations with TALENT tests and prediction of choice of and success in various college majors for those who went to college; an individual scale showing the highest correlation for each criterion for males and females; and the similarity indices among predictors of various criteria for 12th grade males and females. The major findings are that (1) the best way to predict what a high school student's college major will be is to ask him; (2) the best way to predict his success in that major is to give a conventional test of academic aptitude; and (3) one should use choice as a substitute criterion for success only as a last resort, for the correlates are likely to be different. (ERIC)

106. Richards, James M., Jr. A longitudinal study of young farmers in the United States. Journal of Vocational Behavior, 2, 1972, 179-189.

Purpose: to examine personal characteristics and experiences associated with choosing and succeeding in a farming career.

Data Used: The sample consisted of 12th grade males who responded to the five-year follow-up. Only those indicating an occupational choice both in 1960 and at the follow-up were included. The variables were (1960) TALENT composites for verbal, quantitative, and technical aptitude and for SES; the personality and interest scores; SIB questions on career plan, extracurricular activities, part-time work, considerations in choice of a job, high school curriculum, father's occupation, and expectations of college attendance and major and of future financial status; (5-year) career plan, race, religion, marital status, post-high school education, and current work experience, income, and job satisfaction.

Analyses: Students choosing farming on one or both questionnaires were classified as persisters in, dropouts from, or recruits to a career in farming. These groups were compared with each other and with students in general. Figures for students in general were obtained from an earlier TALENT report (A51 in this bibliography).

Findings: The most outstanding characteristic of young farmers as high school students was their involvement in agriculture. Their fathers were likely to be farmers, and they were likely to have been active in farm youth groups, to have taken an agricultural high school curriculum, and to have planned a major in agriculture if they planned to go to college. Persisters tended to have been more involved with agriculture than dropouts, and dropouts more than recruits. Farmers were more likely to be white and Protestant and to have established their family by five years after high school; they were less likely to attend college. Despite lower incomes, farmers were as satisfied with their work as people in other occupations.

Related Publications

Richards, J. M., Jr. Prediction of choice of and success in agriculture as a college major. Educational and Psychological Measurement, 31, 1971, 505-512.

107. Roudabush, Glenn E. Prediction for non-random subgroups. Paper presented at the meetings of the American Psychological Association, New York, September 1966. (T-32)

Sponsor: The work was partially supported by a National Science Foundation grant.

Purpose: College grades depend not only on student achievement but on the standards of the instructor of the course and the grading practices of the college and department offering the course. Thus, students attending different colleges or working within different departments in the same college constitute nonrandom subgroups--that is, groups that differ systematically with respect to the predictor variable--in any study that seeks to predict college grades. This study compared four methods of predicting performance across nonrandom subgroups.

Data Used: The sample consisted of males tested by TALENT as 9th or 10th graders who were currently attending one of five specified colleges. The predictor variables were (1960) scores on information in Music, Social Studies, Scientific Attitude, Sports, Art, Accounting/Business/ Sales, and Bible; English subtests; Reading Comprehension; Creativity; Mechanical Reasoning; Visualization in Two and Three Dimensions; Abstract Reasoning; and Math I, II, and III. The criterion variables were college grades in math, physical sciences, social studies, English, and average in all subjects (from the one-year follow-up).

Analyses: The four methods of prediction compared were (1) predicting separately for each group. This approach had two drawbacks: (a) if there were a lot of subgroups, the number of separate regression equations required could become unmanageable, and (b) there could be too few cases in each group to make valid predictions. (2) Ignoring possible differences in instructors and particular courses and making separate predictions for some number of course areas separately for each school was a second method, which would work well for large or popular course areas where individual instructor and course differences would tend to be washed out by averaging and where the sample sizes would be large enough to give stable weights. (3) Using the same matrix of prediction weights for all cases but separate additive constants for each group was another possibility, or (4) the same additive constants could be used but a separate correction matrix to the prediction weights for each group. The correction matrix would be computed anew for each group as the predictions were made. To test the four methods, the predictor data were standardized within grade and subjects were randomly split into two samples. The first sample was used to complete regression weights by each of the four procedures. Predictions were made for the data in the second sample, and validity coefficients were computed.

Findings: The author did not expect any of the prediction methods to work well, since self-reported grade averages were not likely to be very predictable by any method. This was the case with the data of the study. However, the author commented that despite the poor predictability of the criteria used in the study, the alternative methods--(2), (3), and (4) above--seemed promising.

108. Russ-Eft, Darlene, & Flanagan, John C. Contribution of vocational guidance, vocational training, and employment to the quality of life of 30-year-olds. Palo Alto, California.: American Institutes for Research, 1976. (57200)

Sponsor: Committee for Economic Development

Purpose: to provide data on the employment situation of various samples of Americans. A sample of 1,000 30-year-olds who had participated in the TALENT testing was interviewed to find answers to these questions: What were the factors that contributed to quality of vocational guidance? For those who had had vocational training, which aspects were useful or not useful to them? What problems confronted the 30-year-olds in making the transition from school to the work situation?

Data Used: The study was based on a subsample of 1000 students who were 15 years old when tested by Project TALENT in 1960. This age group was chosen because, at the time of the original testing, an effort was made in 10% of the high school units to locate all 15-year-olds to obtain a complete age group, regardless of grade and including those out of school. Thus it was possible to select a nationally representative sample of 1960 15-year-olds, 30-year-olds at the time of the current study, on whom a large amount of data were available. The variables included 1960 data on interests, information, ability, home background, activities, plans, and characteristics of high school attended (including courses offered and nature of counseling program), to which were added information obtained from a three-hour interview on earlier school experiences, relationships with parents and siblings, health factors, adolescent development, subsequent school/college/special training experiences, informal learning, marital situation and children, occupational histories, material well-being, intellectual/personal/social development, and leisure activities and interests.

Analyses: Case histories for each individual were compiled. For each case history, any examples were noted of effects of five educational factors that were known to have substantial, lasting impact on the lives of these young people. The five factors were: (1) developing educational goals and plans, (2) teacher influence, (3) amount of time spent studying new material, (4) appropriateness of courses taken, and (5) availability of counseling. The responses were categorized and tabulated according to positive and negative experiences in these five areas. Amount of education obtained at age 30 was related to 1960 ability test scores and SES. 1960 Interest Inventory responses were related to career at age 30. Information on post-high school vocational training and its usefulness was obtained from the interview. School-to-work transition was studied using 1960 test scores, information on military service, post high school education, occupational history. Individuals' transitions were classified as successful at several points after high school or never successful. 1960 Reading Comprehension scores and highest degree obtained were correlated with category of school-to-work transition.

Findings: Deficiencies in vocational guidance had caused serious problems for more than 70% of the respondents. Clear relationships were found between abilities and interests at age 15 and later educational and occupational achievement. Of those taking noncollege post-high school education, almost 70% found the training to be useful. Only about 40% of the men and 25% of the women were able to make a school-to-work transition judged "successful" in terms of working toward a realistic goal and having a job that is satisfying and has opportunity for advancement toward the individual's goal. However, of those not making an entirely "successful" transition, another 40% of the men and 37% of the women were in jobs consistent with their abilities. 21% of the women were in jobs that did not utilize their high abilities, and 15-20% of men and women never had settled on one career. About 80% of men and women said they were satisfied with their present occupation.

Related Publications

Boocock, S. S. Patterns of life course transitions in a sample of young adults. Paper presented at conference on Improving American Education sponsored by American Institutes for Research, Palo Alto, California, January 1976.

109. Schnorbus, Robert Hays. Labor market segmentation: A study of barriers to occupational mobility. Ph.D. dissertation, Case Western Reserve University, 1978. (95133)

Purpose: to determine the extent to which institutional, as opposed to individual, barriers to occupational mobility contribute to labor market segmentation.

Data Used: The sample consisted of 1,604 male TALENT participants who were 9th graders in 1960 and for whom complete follow-up data were available. The variables included responses to occupation items from 1960 and the one-, five-, and 11-year follow-ups, academic aptitude, race, SES, education, and marital status.

Analyses: The occupational mobility of youths was compared with that of the entire labor force. The expected mobility of all youths was compared with the mobility of disadvantaged youths (the variables used for classifying youths as "disadvantaged" were race, SES, number of job changes, high school diploma, community size, and region of the United States). An attempt was made to explain the differences in observed mobility by using an economic model emphasizing human capital and a social model emphasizing family background; if differences between the advantaged and disadvantaged segments could not be explained by the economic variables, the barriers were determined to be institutional rather than personal.

Findings: Youths were more mobile (both upward and downward) and less hindered by occupational boundaries than the labor force as a whole. However, disadvantaged youths had less upward and more downward mobility than the youth labor force as a whole, and the boundaries between white-collar, blue-collar, and service occupations were more of a hindrance to their mobility. Barriers to upward mobility appeared to be predominantly personal for the advantaged segment but institutional for the disadvantaged segment. The author suggested that disadvantaged youths should possibly be considered to be a separate labor force.

110. Schoenfeldt, L. F. Education after high school. Sociology of Education, 41(4), Fall 1968.

Purpose: to report proportions of high school students selecting various educational alternatives after graduation and assess differences among the various post-high school education groups in terms of ability, interests, temperament, and family background.

Data Used: The sample consisted of TALENT 11th graders who responded to the one-year follow-up. For the discriminant analyses, subjects had to have scores available for all variables. Because the numbers of both males and females in the college and no post-high school education groups were extremely large, a 10% random subsample was used in the analyses for these groups. Variables were selected from four major categories (20 information scales, 16 ability scales, 27 temperament and interest scales, and 16 SIB items) by means of a discriminant analysis. A set of 27 variables was selected for each sex based on ability to discriminate between males and females with different types of post-high school educational experience. The TALENT composites for SES and general academic aptitude were also used in the study.

Analyses: Males and females were grouped separately according to type of post-high school education. The male groups were (1) four-year college, (2) junior college, (3) armed forces school, (4) technical institute, (5) trade or apprentice school, and (6) no post-high school education. The female groups were (1) four-year college, (2) three-year school of nursing, (3) junior college, (4) secretarial or business school, (5) trade school, and (6) no post-high school education. Crosstabulation and discriminant analysis were used to find percentages who enrolled in various types of post-high school education; percentages in various types of post-high school education by SES and general academic aptitude; probability of entering a four-year college at various aptitude levels; and mean scores on the 27 male and female variables for each post-high school education group.

Findings: During the four-year period of the follow-up surveys, the percentage of students reporting some further education increased from 57% to 68%. (This finding was taken from an interim report written by TALENT staff--A52 in this bibliography.) Males attending junior college tended to be either high-SES/low ability or above average ability/low-SES. Females attending junior colleges tended to have low SES. Ability was more important for four-year college entry than SES. The Mechanical-Technical Interest scale made the largest contribution in differentiating the six male educational groups; for the females, too, the majority of the variables responsible for differentiating the educational groups were interest variables.

111. Shaycoft, Marion F., Neyman, Clinton A., Jr., & Dailey, John T. Comparison of Navy recruits with male high school students on the basis of Project TALENT data. Final Report. Washington, D.C.: American Institutes for Research, 1962. (C-65)

Sponsor: Personnel and Training Branch, Psychological Sciences Division, Office of Naval Research

Purpose: The Navy Basic Test Battery was equated to the Project TALENT battery in order to make possible comparisons of Navy recruits with other groups studied in Project TALENT, such as those who attended college or entered various occupations.

Data Used/Analyses: In the first phase of the project, the TALENT battery was administered to approximately 8,000 Navy recruits. The Navy supplied Project TALENT with the scores of these recruits on the Navy Basic Test Battery and on some experimental test forms developed by the Bureau of Naval Personnel. The Navy Basic Test Battery scores were calibrated against appropriate composites of TALENT battery scores. High school norms for Grade 12 boys, and age norms for 15-year-old boys, were determined for these composites. In the second phase of the project, the Navy recruits were compared with the TALENT 12th grade boys in regard to abilities, plans, high school curriculum, activities, interests, and other personal characteristics.

Findings: For each of the four tests included in the Navy Basic Test Battery, there was a composite of TALENT tests that would serve to collect the same information. Navy recruits scored lower, on the average, than Grade 12 boys in all areas. It was pointed out that this was to be expected since many recruits never reached Grade 12 and since the boys who go to college immediately after high school were not in the manpower pool from which the recruits came. About 10% of the recruits scored high enough on TALENT ability tests to indicate they would do well in most public universities, and about 2% would have done well in the more selective colleges and universities. The recruits scored higher in Mechanical Information, Electrical and Electronics Information, Visualization in Three Dimensions, and Mechanical Reasoning--areas which are closely related to many Navy assignments. The Navy recruits were more likely to have been in vocational or general curricula in high school.

112. Shaycoft, Marion F., Dailey, J. T., Orr, D. B., Neyman, C. A., Jr., & Sherman, S. E. *Studies of a complete age group: Age 15*. American Institutes for Research, 1963.

This report describes the TALENT "15-year-old sample." A probability sample of all 15-year-olds in the United States was established, consisting of 4.5% of all subjects in grades 9 through 12 and less than one-half of one percent of all others. The 9 through 12 grade segment was tested as part of the regular Project TALENT testing. Those not in high school were intensively sought out by a variety of methods. The purpose of the study was to ensure, by supplementing the data on high school students with data on boys and girls of high school age but not in high school, that the national TALENT inventory would be truly comprehensive. A by-product was numerous items of information about American 15-year-olds.

113. Shaycoft, Marion F. Calibration of academic aptitude composite to Project TALENT results. Technical Report. American Institutes for Research, Washington, D.C., April 1963. (C-95)

Sponsor: Aerospace Medical Division, Air Force Systems Command, Brooks Air Force Base, Texas

Purpose: to add to the calibrations done in AIR project C-33 the calibration of an additional AFOQT variable, the Academic Aptitude Composite score, to Project TALENT norms

Data Used: The equating was based on the same set of test results for the same sample of basic airmen as in the AIR project described in publication A41 in this bibliography.

Analyses: The sample of 2,489 basic airmen was split in half to form subsamples A and B. The AFOQT Academic Aptitude Composite was computed from the airmen's scores from the earlier project. Intercorrelations were obtained separately for subsamples A and B among 21 variables from the AFOQT and TALENT tests. Stepwise multiple regression analyses were carried out for each subsample with the AFOQT Academic Aptitude Composite as the criterion. Based on the results of this analysis, five TALENT tests--Math Information, Aeronautics and Space Information, Reading Comprehension, Introductory Math, and Advanced Math--were selected to form the composite corresponding to the AFOQT Academic Aptitude Composite. The AFOQT Academic Aptitude Composite and the composite of these five tests were equated by an equipercentile procedure.

Findings: N/A

114. Shaycoft, Marion F. The high school years: Growth in cognitive skills. Interim Report. American Institutes for Research, 1967.

In 1963, 10,000 students constituting the entire 12th grade enrollment of over 100 high schools were given an abridged version of the 1960 TALENT tests. The 7,500 members of this sample who had also taken the TALENT tests in 1960 as 9th graders are the subjects of this study. The purposes of the study were (1) to determine if some schools were more effective than others in educating students, and if so, what characteristics contributed to this effectiveness; and (2) to check on the reliability of the TALENT test battery. The average gain for students between 9th and 12th grade was found to be substantial; the larger gains tended to be associated with school-taught subjects or areas such as vocabulary that are school-related. Grade 9 score was a good predictor of Grade 12 score. Some schools showed more gain for their students between grades 9 and 12 than others, suggesting that they were doing a better job of educating students. There were many areas of difference between schools that affected gain. In regard to the TALENT tests, it was found that most of them were speeded to just about the degree specified in the original test rationale. The tests had satisfactory reliability coefficients in relation to test length. The reliability coefficients for difference scores tended to be low. Residual grade 12 scores (after elimination of the component predictable from the corresponding grade 9 scores) were found to have satisfactory reliability and to be more reliable than difference scores.

Related Publications

Shaycoft, M. F. Cognitive growth during high school. In Noll, V. H., & Noll, R. P. (Eds.), Readings in educational psychology. New York: Macmillan, 1968. (Reprinted in Gold, M., & Douvan, Elizabeth (Eds.), Readings in educational psychology, 2nd edition. Boston: Allyn and Bacon, 1969.)

115. Shaycoft, Marion F. Careers in science: A Project TALENT study. Final Report. Palo Alto, California.: American Institutes for Research, 1975. (35000)

Sponsor: National Science Foundation

Purpose: to study differences between those in different science careers and between scientists and nonscientists.

Data Used: The sample consisted of 1960 12th graders with 11-year follow-up data. The variables included most of the major variables from the TALENT battery, especially those that previous research had indicated were likely to be relevant in the identification of persons with scientific or technical aptitude. In addition, eight TALENT ability composites were used: IQ, general academic aptitude, verbal, quantitative, technical, scientific, math, and technical information. Variables from the 11-year follow-up included amount and kind of education, long-range career plan, and current job, salary, and job satisfaction.

Analyses: Discriminant analysis was used to identify a combination of test scores (linear function) that predict which high school students go into scientific occupations or into nonscientific occupations. Six separate discriminant analyses were carried out for males only--three on cognitive scores and three on cognitive and interest scores. A seventh discriminant analysis was performed for both males and females in nonscience careers, to determine how the science-nonscience discriminant analysis differed from a similarly computed male and female discriminant analysis.

Findings: A function that appeared to represent the science-nonscience dimension showed up in each of the six male discriminant analyses. Variables characterizing scientists included high scores in Electrical and Electronic Information, Advanced High School Math, Introductory High School Math, and Interest in Physical Science, Engineering, and Math. However, when means were tabulated on one of the discriminant functions for groups homogeneous with respect to occupation and amount of education, no clearcut science/nonscience continuum emerged. The explanation was suggested that job titles may not always accurately describe job activities. By the 11-year follow-up, almost no one planned a career change between clearly science and nonscience careers; however, some scientists wanted to move to a different field of science, and some wanted to move to one of the careers that were considered in this study to be marginally classifiable as "scientific." Many men with scientific aptitude had chosen careers as lawyers.

116. Sherman, Stuart E. Calibration of Inter-American Series Test Battery with selected Project TALENT tests. Final Report. Washington, D.C.: American Institutes for Research, June 1963. (D-30)

Sponsor: The research was done under contract with the University of Texas.

Purpose: to develop norms for the American edition of the Inter-American Series tests of General Abilities and Reading. The norms were developed by equating performance on the Inter-American tests to performance on Project TALENT tests.

Data Used: Selected tests from the Inter-American and TALENT batteries were given to about 450 students in five high schools. The schools were selected by the staff of this study using the same classification system as Project TALENT had developed for drawing its school sample. The five schools selected represented five of the TALENT school classifications--cities of 250,000 to 1.5 million, Northeast small town/rural, Southeast small town/rural (all-black schools were excluded from this study), Midwest/West cities 5,000-250,000, and Midwest/West small town/rural. The Project TALENT tests administered to students in the five schools were: Reading Comprehension, Arithmetic Reasoning, Arithmetic Computation, and Abstract Reasoning. The students also took the Inter-American tests and, on the basis of their performance on the tests in the two batteries, the Project TALENT and Inter-American tests were equated.

Analyses: The Project TALENT tests had quite stable norms due to their having been administered to a very large national sample. Equivalent norms were established for the Inter-American tests by using the equi-percentile method of equating. Correlation matrices on 24 variables were computed for the tests from the two batteries by grade/sex, grade, sex, and with all cases combined. Since grade and sex differences proved to be minor, all cases were combined for the purpose of developing the conversion tables.

Findings: The sample appeared, when frequency distributions of test scores were made, to be representative of the general population. The correlations between the tests from the two batteries were high. Conversion tables for the tests were presented.

117. **Skypek, Dora Helen, Lee, Eugene C., and Cox, M. Katherine.** A study of factors that influence women and blacks in science career choice and stability. Emory University, Division of Educational Studies, Atlanta, Georgia, 1976. (95115, 95123)

Sponsor: National Science Foundation

Purpose: to identify factors that influence women and blacks in career choice and stability in the fields of mathematics, life and physical sciences, and engineering.

Data Used: TALENT participants tested in 1960 as 12th or 11th graders were used in this 3-phase study. The sample included, for Phase 1, those who had 5-year follow-up data and had had a science career plan in high school; and for Phase 2, those with 11-year data who had had a science career plan at the 1-year or 5-year follow-up. Phase 3 compared blacks in the Phase 1 and 2 samples with non-blacks. The variables used in Phases 1, 2, and 3 included: (1960) information scores on Vocabulary, Mathematics, Physical Science, Biological Science, Scientific Attitude, Aeronautics and Space, Electricity and Electronics, and Mechanics; ability scores on Creativity, Mechanical Reasoning, Visualization in Three Dimensions, Abstract Reasoning, Arithmetic Reasoning, and Introductory High School Math; the 17 interest scales; the 10 personality scales; the TALENT SES composite; and SIB data on science and math courses taken, grades, parents' occupation and education, siblings, awards in science or math, occupation expected/desired, influences on decision to go/not go to college, definiteness of career choice, and agreement that more girls should go to college because the country needs more trained women; (1-year follow-up) post-high school education and marital status; (5-year follow-up) occupation, post-high school education, career plans, regrets, and marital status. Additionally, in Phase 2, information was taken from the 11-year follow-up on occupation, job satisfaction, post-high school education, marital status, regrets, and rating of high school preparation for school/job. This information was also used in Phase 3.

Analyses: The Phase 1 sample was divided into "ladder" versus dropout groups--those who were or were not in a science job or preparing for a science career five years after high school. The goals of the Phase 1 analysis were to identify the variables that discriminated between the female ladder/dropout groups and between the female and male members of the ladder group. The Phase 2 sample was divided into persistors versus dropouts--those who had or had not continued with their 1- and 5-year science career goals and had or had not found employment as scientists by the 11-year follow-up. The major goals of the Phase 2 analysis were to identify the variables that discriminated between female persistors/dropouts and between female/male persistors. Phase 3 repeated the Phase 1 and 2 analyses comparing blacks with the total population.

Findings: As compared to dropouts, female 5-year persistors had higher academic aptitude, less interest in office work, were less sociable, and more often had fathers in professional or technical occupations. 66% of the male but only 36% of female persistors had planned a science career while in high school. Mean salaries of male persistors at the 11-year follow-up were $14,230; of females, $10,790. Persistors who were working 11 years after high school were earning $2,000 more a year than dropouts. TALENT data confirmed findings of other studies that blacks were underrepresented in the sciences.

118. Sørenson, Aage B., & Hallinan, Maureen T. A reconceptualization of school effects. Sociology of Education, 1977, Vol. 50 (October), 273-289. (95117)

Sponsor: The research was supported by a grant from the National Institute of Education to the University of Wisconsin's Institute for Research on Poverty.

Purpose: Project TALENT data was used to evaluate a new conceptual framework for the analysis of school effects on learning.

Data Used: The sample consisted of persons who had been tested by Project TALENT in 1960 as 9th graders and who had taken the 1963 retest in the same school. The variables were the students' scores on Mathematics Information and English Total in 1960 and in 1963.

Analyses: A differential equation model for change in academic achievement was derived from the conceptual framework. The model implied a mechanism where growth in academic achievement was constrained by opportunities for learning. Increasing opportunities for learning would increase the gap between low and high achievers, since students with higher ability and socioeconomic background would take more advantage of the new opportunities. The equation was fitted, using ordinary least squares, to over-time data on academic achievement from the TALENT retest study. SES, IQ, and sex were the exogenous variables in the equation, and growth in academic achievement between 1960 and 1963 was the dependent variable.

Findings: Some evidence for the validity of the model was found. The fit was better for math achievement than for English; the authors suggested this might be because math is learned in school while language is learned both in and out of school. It was also concluded that new data collection would be needed to effectively test the model.

119. Spaeth, Joe L., & Greeley, Andrew M. Recent alumni and higher education: A survey of college graduates. New York: McGraw-Hill, 1970. (95081

Sponsor: The Carnegie Commission on Higher Education sponsored a fifth data collection wave of a study that the National Opinion Research Center had been carrying out for the U.S. Office of Education and the National Institute of Mental Health.

Purpose: to describe the effects of college education on 1960 alumni and to report suggestions these individuals made for improving their college experience.

Data Used: Project TALENT data were used in Chapter 8, "The Transition from High School to College," to answer two questions: who goes to college, and what effects does college entrance have on a young person's occupational plans? A random 20% sample of TALENT males with complete 1960 and one-year follow-up data was used. The variables included (1960) TALENT composites for IQ and SES; scores on Information I Total and Math Information; and SIB items on high school curriculum, number of school changes, high school grades, family income and finances, father's occupation, parents' education, students' expected/ desired occupation, and college plans; (one-year follow-up) post-high school education, job, and career plan.

Analyses: High school and post-high school occupational prestige expectations were derived by assigning NORC prestige scores to the occupations expected and desired in 1960 and to the occupation planned one year after high school. A model was developed in which the process by which a young man makes his occupational plans had several stages, with each stage dependent (causally) on all prior stages. The stages were (1) abilities and SES, (2) allocation to a high school curriculum track, (3) academic performance in high school, (4) high school career plans, (5) planning for college, (6) going to college, and (7) career plan one year after high school. Path analysis was used to describe the ways in which the influence of preceding variables was transmitted directly or through intermediate variables to variables at later steps in the causal model. Post-high school prestige expectations was the ultimate dependent variable in the path analysis.

Findings: SES and ability together explained only 31% of the variance in high school curriculum track assignment, with ability having more explanatory power. High school grades had little relationship to ability; it was speculated that self-reported grades were not an adequate measure of high school achievement. High school curriculum had the strongest predictive power for 1960 career expectation and for 1960 college plans; 1960 college plan had the strongest influence on college attendance; and college attendance had the strongst influence on one-year occupational plan. The ability variable had the strongest independent contribution to explaining post-high school prestige expectations, followed by college attendance, 1960 occupational expectations, college plans, high school curriculum, SES, and high school grades; but high school curriculum was important in transmitting the effects of both prior variables (SES and ability).

120. Spaulding, Barbara George. Factors related to the choice of home economics as a college major by women. Ph.D. thesis, Purdue University, August 1972. (88860)

Purpose: to identify factors that distinguished women who majored in home economics in college from those who chose other majors

Data Used: The sample consisted of females tested by Project TALENT in 1960 as 9th graders. The criterion group consisted of 9th grade females who responded on the one-year follow-up that they were in college and planned a home economics major, and the comparison group was a sample with the same number of women as the criterion group, drawn at random from the women who had responded on the 9th grade one-year follow-up that they were in college and planning a major other than home economics. The variables included region of the United States in which high school was located; TALENT composites for IQ and SES; SIB items on activity in farm youth groups, discussing plans with counselors/other adults/peers, who was family breadwinner, type of house, magazines in home, and reasons for going to college; and the criterion variable, planned college major.

Analyses: Multiple discriminant function analysis was used to attempt to determine the ability of 36 predictor variables to separate the subjects into two mutually exclusive groups--home economics majors and other majors.

Findings: The elements contributing the most to the discriminant function appeared to be social factors, with the girls who chose home economics as a major being influenced by such aspects of college as social life, necessity of college degree for occupation planned, a belief that they could earn more money with a college degree, and the fact that their parents wished them to go to college. The other majors appeared to be influenced to a greater extent by the number of times they had discussed future plans with teachers, counselors, parents, and others. Other variables of significance were activity in farm youth groups and exposure to farm magazines, IQ, and region of country where the girl had attended high school.

121. Spiegelman, Robert G.; Gorfinkel, Martin; Kurz, Mordecai; & Weiner, Samuel. A benefit/cost model to evaluate educational programs. Menlo Park, California: Stanford Research Institute, January 1968. (T-50)

Sponsor: U.S. Office of Education

Purpose: To investigate the applicability of cost/benefit analysis to evaluation of educational programs, the authors planned to evaluate a single educational program, determining the difference between the monetary benefits (to the individual and society) and the costs of the program.

Data Used: Data from several sources was used in the report. These sources included (1) census data, (2) data from the files of the Oakland, California public school system, (3) Project TALENT data, and (4) arrest data from the files of the Oakland police department. The sample for the TALENT analysis included the TALENT 10th graders; the TALENT variables were (1960) scores on Social Studies Information, Visualization in Two Dimensions, and Vocabulary; SIB items on family background, expectations for college major and occupation, community characteristics, number of times moved; GSC items on school type, grade levels included, class size, homework, extracurricular activities, teaching machines, curricula, teachers, location, expenditures, and guidance programs; (1-year follow-up) high school graduation, employment, post-high school education, and military service.

Analyses: The Oakland Title I ESEA program was chosen as a case study; the model developed for this program was to be applicable to other programs for educating disadvantaged children. Such programs were viewed as having the following benefits: (1) increasing the learning capacity of children and thereby their earning power, and (2) increasing the likelihood that they would stay in school, graduate and go to college, and not become juvenile delinquents. To predict the probability of high school graduation from achievement scores, multiple regression analysis using TALENT data was tried, but results were not satisfactory. The TALENT results, however, were used as the main basis for estimating the proportions of those in the Title I program who went on to college. For blacks, estimates were based on the results in schools with more than 80% black pupils combined with results for those pupils in the lowest SES quartile; for non-blacks, the estimates were for those in schools with less than 80% black pupils, combined with the results in the lowest and second lowest socioeconomic quartiles (to reflect the fact that non-blacks in Title I are also from poor families). The Markov Chain model assumed that score distributions could be predicted from the preceding year's score distributions. To fulfill the assumption that a stable relationship existed between achievement score and later educational attainment, the group had to be homogeneous; to make the groups more homogeneous they were divided into blacks and whites. As part of the Markov Chain model which included students from 4th graders to college entrants, the percentage of high school graduates going to college was estimated from TALENT data for males and females separately, based on the relationship between achievement test scores in 10th grade and percentage of high school graduates in college at the one-year follow-up. To take into account those who go on to college but not directly out of high school, the distribution of college-going by score class was adjusted proportionately in all score categories to conform to the overall proportions shown by the Census. The assumption was made that college attendance would be proportional to high school achievement test scores.

Findings: A table based on TALENT data showed that within each socioeconomic quartile a much higher percentage of children scoring above the median in 10th grade achievement tests attended college than of those scoring below the median. TALENT results were also used as the main basis for estimating the proportions of those in the Title I program going to college. The benefit/cost ratios calculated for the Oakland Title I program appeared to justify the program, but it was pointed out that the results were only based on one case study district studied for only one year of a long-range program. The much lower predicted returns to blacks were attributed to lower achievement, less likelihood of attending college even if achievement was equal, and lower expected salaries.

122. Strauch, A. Barry. An investigation into the sex x race x ability interaction. Ph.D. thesis, Department of Educational Psychology, Pennsylvania State University, November 1975. (95121)

Purpose: to investigate Jensen's (1971) conclusion that, in mental ability, there are greater sex differences in one race than another. Jensen had cited evidence that black women outperform black men, while white men and women are more similar. He suggested that the reason was that women are inherently more resistant to stress than men.

Data Used: Three large data bases were used. (1) The Psychological Corporation provided the standardization sample of the WISC-R in which 2,200 children aged 6 to 16 were tested. (2) The Pennsylvania Department of Education provided test data for 50,000 5th, 8th, and 11th graders from a statewide Educational Quality Assessment. (3) Project TALENT provided data on a sample of 9th graders with 5-year follow-up data. The sample was weighted to correct for nonrespondent bias. The variables were the TALENT composites for IQ and SES, plus 5-year follow-up data on race.

Analyses: The study evaluated the stability of the hypothesized race-sex interaction by employing several tests of mental ability. Each of the three data sources was analyzed with a three-way analysis of variance in which the factors were sex, race, and SES.

Findings: Only two of the sex x race interactions achieved statistical significance, both involving greater sex differences among whites--opposite to the direction hypothesized by Jensen. (This finding was based on the EQA data; TALENT data did not show any significant sex x race differences.) The TALENT data showed only one significant difference, on the interaction between race and SES. However, the TALENT and other data did show significant academic ability differences among the races and socioeconomic groups as such (without interactions). The author concluded that the sex x race interaction was not a real phenomenon insofar as mental ability was concerned. A sex x race interaction did occur in college attendance and occupational status; this was attributed to environmental factors such as racial prejudice and a history of greater achievement motivation in the black female than in the black male.

Related Publications

Strauch, A. Barry. More on the sex x race interaction on cognitive measures. Article submitted to *Journal of Educational Psychology*, May 1976. (95121)

123. Thomas, J. Alan. Administrative rationality and the productivity of school systems. University of Chicago, Midwest Administration Center, June 22, 1964. (Mimeo) (D-27)

Purpose: to add to understanding of the role played by the school administrator in educational system productivity

Data Used: The TALENT data used in this analysis had been obtained for an earlier study.* For the current analysis, the data used included: school means for TALENT 12th graders on the following ability variables (Phase I) Information Total, English Total, Reading Comprehension, Creativity, Mechanical Reasoning, Mathematics II; (Phase II) Mechanical Reasoning, Math III: and (Phases I, II) GSC data on per-pupil expenditures, size of 12th grade class, median starting salary of male teachers, type of secondary school (comprehensive, technical, etc.), number of books in library, age of school building; for Phase II percentage of the graduating class going to college was also used (from the 1-year follow-up). Data from the Census were used for Phase I on median family income, housing quality, and median years of schooling for adults 25 years or older in the community; and for Phase II on percentage of civilian labor force engaged in manufacturing, distance of community from nearest city of 100,000+ population, and housing quality in the community.

Analyses: In the first phase, multiple regression was used to predict school mean scores on the six Phase I ability tests from the three sets of Phase I variables--community characteristics (the three census variables), per-pupil expenditures, and the five GSC items. In the second phase, multiple regression was used to relate the percentage of boys in the school's most recent graduating class going on to college (dependent variable) to school means on the two Phase II ability variables, the three Phase II census variables, and the five GSC variables.

Findings: In both phases the school input variables accounted for an appreciable portion of the criterion effects (student achievement scores and college entrance). Per-pupil expenditures, which were entered into the equations separately from the other school input variables, showed little effect on the criterion.

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* James, H. Thomas; Thomas, J. Alan; & Dyck, Harold J. Wealth, expenditure, and decision-making for education. Cooperative Research Project No. 1241. Stanford University, School of Education, 1963.

124. U.S. Department of Health, Education, and Welfare, Office of the Assistant Secretary for Planning and Evaluation. Toward a long-range plan for federal financial support for higher education: A report to the President. January 1969. (T-74)

Purpose: This report responded to the President's request that the Secretary of Health, Education, and Welfare begin preparing a long-range plan for Federal support of higher education.

Data Used: The data came from many sources. Project TALENT data were used in a small section to present the current state of higher education. The sample for the TALENT analysis consisted of 12th and 11th graders with 1- and 5-year follow-up data. The variables used were (1960) the TALENT composites for IQ and SES, and (follow-up) data on high school completion, college entrance, type of college, college graduation, and graduate school entrance.

Analyses: For the data reported in the section, "Who Goes to College?", students were grouped by ability and SES quartile, and distributions were prepared showing percentages entering four-year public/private colleges and two-year colleges. Probability of completing high school, entering college, receiving bachelor's degree, and entering graduate school were calculated for the eight ability/SES groups. Distributions of students in achievement groups composed of the top 20% and the next 20% were compared for college entrance.

Findings: College attendance five years after high school was found to be highly determined by SES, and the authors comment that the evidence points to a significant loss of academically able students who do not enter college because of the SES of their families. The effect of SES on obtaining a degree within four years was much less significant than the effect of SES on entering college. SES also had a significant effect on graduate school entry.

125. Veit, Harold Robert. An analysis of the parental backgrounds of selected twelfth grade students who have indicated teaching as a career choice. Ph.D. dissertation, George Washington University, 1966. (T-2)

Purpose: Previous studies of teachers' scholastic abilities, health, and personality characteristics had made possible improvements in teacher recruitment procedures. This study added to the previous knowledge an analysis of the family backgrounds of those planning teaching careers.

Data Used: The sample consisted of TALENT 12th graders who were in college at the time of the 1-year follow-up. The variables included (1960) TALENT composite for general academic aptitude; SIB items on family breadwinner, father's jobs, mother working, parents' participation in community activities, length of residence in community, house, parents' occupation/employer/age/education, siblings; and (1-year follow-up) career plan.

Analyses: The sample was divided into two groups: college respondents who expressed a career plan in education at the one-year follow-up, and all other college respondents. The groups were sorted by sex and into ten aptitude levels. Percentage distributions were computed for the four career plan/sex groups at the 10 aptitude levels on each of the 32 SIB items. A Z-test was used to determine significance of the differences between proportions at the varying aptitude deciles.

Findings: Both male and female prospective teachers tended to be members of slightly larger families than non-teachers, have slightly older parents, and have parents more active in church and school activities. They did not seem to select teaching at any higher rate because of a family member already being in the profession. In addition, male prospective teachers tended to live in smaller houses, their families had lower incomes, they had slightly less educated parents, and their fathers were more likely to have menial jobs and to hold more than one job. Female prospective teachers, in comparison with female non-teachers, tended to have slightly better educated parents and more often had mothers in a professional occupation.

126. Vincent, Howard. An analysis of vocational education in our secondary schools. Office of Program Planning and Evaluation, U.S. Office of Education, July 1969 (revised). (Mimeo) (T-59)

Purpose: To contribute to planning and evaluation of vocational education, this study analyzed the characteristics and employability of vocational students and the holding power and costs of vocational programs, taking into consideration the demands of the labor force and recent trends in federal expenditures for vocational programs.

Data Used: Although several data sources were cited in the report, most of the data analyses described used TALENT data. There were five phases to the study, each with a different sample and set of variables. The Project TALENT sample consisted of 10th grade males and females with 1-year data; 12th grade males with 1- or 5-year data; the sample was restricted for some analyses to high school graduates or further restricted to high school graduates with full-time jobs who were not on active military duty. Variables: (1960) TALENT composites for SES and general academic aptitude; MAP factor scores; sex; code for high school attended; SIB items on high school curriculum taken, courses taken, guidance received, parents' occupation and education, and a job/career code; (follow-up) high school graduation, reason for high school dropout, kind of job, salary, employer, career plan, military duty, post-high school education, decisions regretted, time spend job hunting, hours worked per week, length of time on job, job satisfaction, plans to remain on job, number of jobs held, steps taken toward career plan, race (white/ other), marital status, degrees or licenses planned or obtained, how well education prepared for job/life/citizenship; (GSC) school type, percentage of student body in each curriculum, type of residence in school area, type of area, per-pupil expenditure, race composition of student body, guidance program at high school.

Analyses: Most of the analyses involved frequency and percentage distributions (weighted and unweighted), means and standard deviations for various combinations of variables. Multiple regression, stepwise multiple regression, and zero-order intercorrelation matrices were used for a few analyses.

Findings: On the basis of the TALENT and other data, vocational students were found to be from poor socioeconomic backgrounds, have low academic abilities, and include many minority students. Vocational programs had the highest dropout rates of any high school track. Relatively few vocational education graduates found jobs related to their vocational preparation; most jobs for individuals without college relied heavily on on-the-job training. Vocational programs cost more for schools to operate than other curricula. Federal support was not being given to new vocational programs designed to train for new occupations. However, when differences in abilities were taken into account, vocational graduates were earning more than graduates of general or academic tracks.

127. Wallace, Robert Bruce. The measurement of the economic value of schooling output. Ph.D. dissertation, Northwestern University, June 1972. (81758)

Sponsors: Northwestern University; National Science Foundation; Manpower Administration of U.S. Department of Labor

Purpose: to develop and use a measure of high school output to evaluate (1) the multiple ways in which schooling affects worker productivity and (2) the economic value of that increase in productivity.

Data Used: Data were obtained for two TALENT samples: (1) a 10% random sample of 11th grade male high school graduates with 1- and 5-year follow-up data, and (2) the males in the retest sample. The variables included, for the 10% sample, (1960) TALENT composites for SES and several types of aptitudes; the information, interest, and personality scales and most of the ability scales and SIB items; most of the GSC data; and (follow-up) data on high school graduation, post-high school education, job, income, military service, marital status, race, and religion. For the retest sample, the variables included most of the GSC items and both 1960 and 1963 information on location of school, SES composite, information totals, interest scales, most of the ability scales, and SIB data on high school education, family background, health, and expectations for post-high school education.

Analyses: The strategy was first to predict on the basis of measures of students' personal characteristics the probability of obtaining different amounts of post-high school education and of being employed in different occupations. Then, using these estimated probabilities as weights in the linear combination of expected present values of education-occupation group lifetime earnings, an index was obtained representing the expected value of the student's human capital at an age (say 22) when education and occupation decisions were likely to have been made. The index was obtained and compared for 9th and 12th graders; the difference in their predicted lifetime earnings was the gain or loss in the expected value of human capital over the high school years, and thus a measure of school output.

To prove that personal characteristics do in fact affect later occupation, the 10% sample members were grouped in 17 classifications based on follow-up data on level of education attained and type of job. Differences between members of the 17 groups were found on 24 variables related to SES, abilities, and interests using an analysis of variance. Since follow-up data were not available for the retest sample, their membership in one of the 17 groups was inferred using a formula that assumed the group means would have the same relationship to overall means for the 9th and 12th graders as for the 11th graders. Present value of future earnings was estimated for each of the 17 groups on the basis of 9th and 12th grade scores and the difference between them. To identify differences in students whose predicted earnings had been "radically altered" from 9th to 12th grade, the sample was divided into five groups based on the change in human capital predicted, and vectors of test score differences were obtained. A test was also made to determine whether the school means on increase in students' predicted income differed between TALENT schools. GSC data was used to try to determine inputs that might affect these differences on school means.

Findings: 12 dimensions of individual characteristics were found to distinguish between the educational-occupational groups--nine interest variables, SES, Information II, and math skills. Some of the retest students "grew" while others "stagnated"--their 12th grade scores pointed to less prestigious and well-paying occupations than did their 9th grade scores. Many of the changes between 9th and 12th grade that affected predicted income were changes in interests.

128. Weinfeld, Frederic D., Mayeske, George W., & Adams, Gordon D. Correlational and regression analyses of school achievement for schools of varying racial composition. National Center for Educational Statistics, Division of Operations Analysis, Technical Note No. 50, December 29, 1967. (T-10)

Sponsor: National Center for Educational Statistics

Purpose: (1) to find variables that were predictive of differences in schools on achievement test scores, when controlling for the effects of background factors such as economic level of community, level of school funding, and size and type of school, and (2) to determine to what extent there were differences in the prediction of school achievement for schools of different racial composition.

Data Used: GSC data was obtained on grades included, class size, homework, experimental curriculum, number of books in library, age of building, ability tracks, teachers, school expenditures, parents in PTA, and guidance. In addition, school achievement means were obtained for English Total and Introductory and Advanced High School Math.

Analyses: Several GSC variables were combined to form ratios. Intercorrelations of the 33 resulting variables (including the school achievement means) were computed for three groups of schools: (1) all TALENT schools, (2) student body 1-49% black, (3) student body 50-100% black. The effects of the control variables (school size, community socioeconomic status, school expenditures, number of grades included in school, age of building) were partialed out. Stepwise regression analysis was used on the remaining correlations to determine which variables were good predictors of school achievement. Since the predictors differed for the three groups of schools, a regression was performed to make the analyses comparable across the three school groups.

Findings: Results from this study paralleled findings of the Coleman Equal Opportunity Survey that teachers' level of education made a greater difference in achievement for minority students than for majority group students. Ability tracking was positively related to achievement for predominantly white schools but less so for black schools; in schools with over 50% black pupils, tracking was negatively related to English achievement. Amount of homework assigned was negatively related to achievement in predominantly black schools. Teaching experience was positively related to achievement in predominantly white schools but negatively related in predominantly black, suggesting that the younger, less experienced teachers (who perhaps had had better preparation during their teacher training) were more effective in black schools. Proportion of guidance staff to number of seniors had a negative relation to achievement for schools with less than 50% black students, but a positive relation for schools with over 50% black students.

129. Welland, Jon Douglas. An investigation of the role of abilities in the individual earnings function. Ph.D. thesis, University of Minnesota, December 1976. (95108)

Sponsor: U.S. Office of Education

Purpose: to determine what types of abilities, as measured in high school, influenced later earnings capacity

Data Used: The sample consisted of white males tested by Project TALENT as 12th graders who graduated from high school and who, at the 11-year follow-up, had a full-time job and reported full year earnings in 1971. All nonwhites, doctors, lawyers, teachers, and ministers were removed from the sample for a separate analysis (not reported in this publication), and career military men and farmers were excluded. Individuals with a substantial amount of missing data were also excluded. The variables included (1960) TALENT composites for SES, IQ, and quantitative aptitude; whether attended a public, private, or parochial high school; Vocabulary, Math Information, Scientific Attitude, Mechanical Information; ability scores in Memory for Words, English Total, Reading Comprehension, Mechanical Reasoning, Visualization in Two and Three Dimensions, Arithmetic Reasoning, Introductory and Advanced High School Math, Arithmetic Computation, Table Reading, Clerical Checking, and Object Inspection; and 10 personality scores; (follow-up) religion; marital status; post-high school education; number of weeks worked in the year preceding September 30, 1971; and occupation. Census data on median state income for white males was also used.

Analyses: The predictive ability of the IQ and quantitative composites was compared with that of their component tests. The predictive ability of the component tests was compared with a larger set of TALENT tests. Personality scores were added to the set of variables to see if they increased its predictive power. Effect of leaving out ability and personality variables on bias in education variables was determined. An attempt was made to find a single representation of the earnings function that would best approximate real-world behavior.

Findings: Quantitative ability was a strong predictor of earnings. The specific test scores seemed to be better predictors of income than their composites. The contribution of abilities to earnings increased with higher education level. Personality variables had a slight effect on earnings, with Leadership the strongest of the personality variables. Findings for persons with B.A. or M.A. degrees in six occupational classifications provided support for the view that different occupations rewarded different sets of abilities.

130. Williams, Richard A. Personality characteristics of high-school curriculum groups. Master's thesis, University of Pittsburgh, March 1967. (Unnumbered TALENT Data Bank study)

Purpose: to provide information useful for evaluating suitability of high school curriculum tracks for the needs of students

Data Used: The sample consisted of 10% of all TALENT 12th graders, chosen at random. Students with incomplete data on the 100 scales from which the MAP factors were created, on high school curriculum, or on the items comprising the SES composite were excluded. The variables included the 22 MAP abilities and motives factors, the TALENT SES composite, and high school curriculum track.

Analyses: Sample members were grouped by sex and curriculum track. Males and females were compared to detect sex differences, and individuals were classified using multiple discriminant analysis to see what variables best separated members of the curriculum tracks.

Findings: When boys and girls were compared on the MAP factors, boys did better on visual reasoning and math and had more interest in science, outdoor activities, and shop; girls did better in English and memory and knew more about colors, foods, and etiquette. When boys and girls in different curriculum tracks were compared on abilities factors, verbal knowledge was highest among boys for the college-prep group and lowest for the agriculture group. Math was good at separating college-prep from other tracks for both boys and girls. The vocational education boys did better at visual reasoning, and girls in business and college preparatory tracks did about equally well on English. On information about color and foods, college preparatory girls scored highest, vocational education girls lowest; vocational education girls also were lower than other tracks on knowledge of etiquette.

Personality factors appeared to discriminate between the curriculum groups better than did abilities factors. College preparatory boys and college preparatory and business girls were higher in conformity needs. Agriculture and vocational education boys and girls were higher on work/hobbies/clubs, and agriculture boys were more often leaders in clubs or captains of athletic teams. On the SES composite, the college preparatory group was highest, business and general next, and agriculture and vocational education lowest.

131. Wilson, Sandra Reitz, & Flanagan, John C. Quality of life as perceived by 30-year-old Army veterans. Final Report. Submitted to U.S. Army Research Institute for the Behavioral and Social Sciences, 1974. (39500)

Wilson, Sandra Reitz, & Flanagan, John C. Quality of life as perceived by 30-year-old Army veterans. Supplementary Report. Palo Alto, California.: American Institutes for Research, 1974. (39500)

Sponsor: U.S. Army Research Institute for the Behavioral and Social Sciences

Purpose: AIR was asked to investigate the impact of Army service on the quality of life of a representative sample of young Americans and analyze the implications of the findings for possible improvement in Army personnel procedures.

Data Used: The sample consisted of a group of 200 men and 50 women selected to be representative of men and women around 30 years of age who had served on active duty for more than six months in the Army at an enlisted or warrant officer rank. The initial sample included men who had been 15 or 16 years old when they were tested by Project TALENT in 1960, and women who had been 13 to 19 (there were not enough Project TALENT female 15-16 year olds with WAC experience to make up the needed sample of 50). Army service was determined from the TALENT five-year follow-up questionnaire. To compensate for nonrespondent bias in the follow-up data, the male sample was drawn with regular and special follow-up respondents represented in the same proportions as they occurred in the complete TALENT sample. (Because of the small number of women with WAC experience, this could not be done for the female sample.) A stratified random sample was selected from the initial sample; the variables used for stratification were regular/special follow-up respondent, education attained at follow-up, and race. Sample members were replaced if they could not be located, refused to be interviewed, or proved not to have had appropriate Army experience
Variables: Two sources of data were used for this study--Project TALENT 1960 and follow-up data, and additional information obtained in a personal interview. For each individual, 38 aptitude, information, and interest inventory scores based on TALENT 1960 data were plotted by hand from the printout of raw scores in terms of percentile norms appropriate for that individual's sex and grade at testing. The 38 scores, developed during the writing of AIR's Career Data Book (A55 in this bibliography) were those that had been shown to be most reliable and most predictive of academic achievement and to discriminate best among those who enter various post-high school careers. Other 1960 and follow-up information was included. The three-hour personal interview asked for information

on early development, high school experiences, post-high school experiences, circumstances of entrance into the Army, experiences while in the Army, reasons for leaving or reenlisting, and effects of Army experience on the individual's life.

Analyses: Interview responses were classified and tabulated. Effects of Army service on occupational development were studied more intensively; a tally was made of good/bad effects reported in the interviews as well as ways the experience might have been more beneficial, and senior staff members read the case histories and rated the overall effect of Army experience on the individual's occupational development.

Findings: About 80% of the men reported some good effects of Army service on their lives, with the majority being in the areas of *occupational role* and *self-understanding and appreciation*. The bad effects reported were primarily in the areas of *socializing*, *health (including mental health) and personal safety* and *occupational role*. From 25% to 50% wished they had received a different classification or different training in the Army.

132. Wilson, S. R., & Wise, L. L. *The American citizen: 11 years after high school*. Palo Alto, California: American Institutes for Research, 1975.

Sponsor: National Institute of Education

This report presents data on the responses of nearly 54,000 individuals from the original sample of about 200,000 11th and 12th graders to each of the questions in the 11-year follow-up. Previously unpublished response distributions for questions on the 5-year follow-up of the same grades and about 100 pages of tabular data make up the major portion of the report. The data are essential for any researcher who plans a TALENT Data Bank study and will suggest important avenues of investigation to others who may be as yet unfamiliar with Project TALENT.

133. Wise, L. L., McLaughlin, D. H., & Gilmartin, K. J. *The American citizen: 11 years after high school, vol. II*. Palo Alto, California: American Institutes for Research, 1977.

Sponsor: National Institute of Education

This report presents data on the responses of nearly 49,000 individuals from the original sample of 10th and 9th graders to each of the questions in the 11-year follow-up questionnaire. Information is provided on the educational, career, and personal experiences of this group and includes their reflections on the value of those experiences. The text highlights some of the interesting results.

134. Woods, Elinor M. The relationship and developmental trends of objective and subjective measures of interests in adolescents. Ph.D. dissertation, Department of Education, Boston College, 1971.

Purpose: Two questions were studied in this project: (1) To what extent are "objective" measures of interests (such as the TALENT information tests) and "subjective" measures (such as the TALENT interest inventory) measuring the same thing? (2) What trends could be found in the development of adolescent boys' and girls' interests from grades 8-12 as measured by the TALENT information test and interest inventory?

Data Used: The sample consisted of all grade 8-12 public, private, and parochial school students in one southern county. The TALENT battery had been administered in 1960 to this "saturation sample" at the suggestion of school authorities in the county. The variables used were the scores of this group of students on the TALENT information tests and interest inventory scales.

Analyses: The sample was divided into ten groups by grade level and sex. Canonical correlation analyses were performed to determine whether a significant relationship existed between results on the information tests and the interest scales. Analyses of means and standard deviations and profile analyses were both used to trace group developmental trends. The maximum correlation method was used to trace the similarities of the objective and subjective measures and varimax factor patterns within adolescents between adjacent grades for each sex.

Findings: Significant relationships between the objective and the subjective interest measures were found at all five grade levels, with the relationship increasing as students progressed to higher grades and being greater for boys than for girls. Interest patterns were similar for the same sex at all grade levels; this finding was interpreted to mean that interests may mature in adolescents at least as early as grade 8. The interest patterns differed between boys and girls along the lines of social sex role expectations. The author pointed out that, although this study dealt with change over time, it was a cross-sectional study--each grade level studied contained different students from the other grade levels. Since there was a high dropout rate in the schools studied, a longitudinal study comparing the changes in interests of the same students over time might have yielded different results.

135. Wueste, Andrew Edward. The oblate minor seminarian in the United States. Ph.D. dissertation, University of Texas, August 1966. (Unnumbered TALENT Data Bank study)

Purpose: to identify traits of seminarians who went on to become priests, and to determine if seminarians were motivated to make adequate use of their talents

Data Used: All five Oblate Minor Seminaries in the United States participated in the study. These were seminaries at the high school level that prepared boys to enter the Oblates, an order of priests specializing in missionary work and teaching. The entire student bodies of the five seminaries made up the sample. (It was noted that screening procedures for entrance to the seminaries and the high dropout rate from the seminaries' exclusively college-preparatory curricula would make this sample different from the nationally representative TALENT sample in terms of academic achievement.) The seminary students were given tests from the TALENT battery to compare them with national norms and from the University of Notre Dame's 1962 Study of Catholic Education to measure their "depth of religious conviction." The TALENT variables came from the following scales: Information I, Memory for Sentences, Memory for Words, Disguised Words, Reading Comprehension, Abstract Reasoning, Arithmetic Reasoning, Arithmetic Computation, and parts of the SAI, Interest Inventory (second part), and SIB.

Analyses: Basic descriptive statistics were obtained to determine characteristics of seminarians. Test results were compared between grades to determine growth in achievement, and were compared to TALENT's national norms for boys at each grade level to determine what characteristics set apart seminarians from the general population of United States high school students.

Findings: The seminarians showed satisfactory growth from one grade level to the next on most of the ability measures. Areas of outstanding achievement were Reading Comprehension, Literature Information, Vocabulary, and Memory. There was also sound achievement in Math Information and Physical Science Information. The seminarians' most serious weakness, compared to TALENT males in the same grade level, was lack of information about mechanics. In terms of personality, the seminarian described himself as an average boy who showed outstanding strength in Culture and Mature Personality, and to a lesser degree in Tidiness. There was some evidence that the older seminarian was beginning to view himself more and more as lacking in certain aggressive, dynamic aspects of personality like leadership and self-confidence, and to a lesser degree in sociability and calmness. Interests that differentiated seminarians from TALENT's national sample of high school boys were their high interest in verbal-scholastic-literary activities and their dislike of sales and physical-labor-related activities, as well as the seminarians' strong interest in helping other people. Seminarians seemed slightly less interested than most high school boys in financial success and security. The differences between seminarians and other high school boys were slight, and the author concluded that criticisms of the academic standards of seminaries could be rejected and that descriptions of the seminary environment as one that was artificial and left students immature and naive were unsupported.

136. Yen, W. M., & McLaughlin, D. H. *Post high school education and career development*. Palo Alto, California: American Institutes for Research, 1974.

Sponsor: National Institute of Education, U.S. Office of Education

This report examined the effects of four-year college, junior college, and noncollege post-high school education on salary, job satisfaction, and employment rate after controlling for the effects of academic aptitude and socioeconomic status. The sample consisted of 17,796 white and 1,427 nonwhite high school graduates who took the TALENT tests in 1960 and who returned their 11-year follow-up questionnaires. The salaries and job satisfaction of four-year college graduates were found to be higher than those of nongraduates, particularly among whites. The salaries of college dropouts were similar to the salaries of those who never attended college; however, among whites job satisfaction was lower for dropouts. Among dropouts, reason for dropping out was significantly related to salary and job satisfaction. Only for women was returning to four-year college and obtaining a degree after dropping out related to higher salaries than not returning. Completion of junior college and noncollege training programs was accompanied by higher salaries only among women.

137. Project TALENT test batteries

The *Project TALENT Specimen Set* includes all tests, inventories, and questionnaires used in the 1960 testing. The Specimen Set is available only for research purposes, and it has been the policy of the American Institutes for Research that it be sent to outside researchers only when there is no commercially available substitute that would serve their purpose.

Planning Career Goals is the title of a package of interest, information, and ability tests for high school students that are normed to the original TALENT test battery. The tests were developed by American Institutes for Research and are published by California Test Bureau/McGraw-Hill in Monterey, California. Part of the scoring for each individual student is reported in terms of comparison with the scores of TALENT students who entered one of the twelve TALENT career groups. *Planning Career Goals* makes use of 11-year follow-up data and is Project TALENT's latest step toward the goal of developing a sophisticated career planning tool based on the experiences of TALENT participants.

B. ADDITIONAL TALENT-RELATED PUBLICATIONS

1. Burket, G. R. Predictor selection as a function of the method of estimating correlations. Presentation at meetings of American Psychological Association, Los Angeles, September 1964.

2. Cahen, Leonard S., et al. A comparison of school mean achievement scores with two estimates of the same scores obtained by the item-sampling technique. Princeton, New Jersey: Educational Testing Service, November 1970.

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5. Claudy, J. G. Guidance effects: Five years later. Paper presented at meetings of California Vocational Guidance Association, San Diego, February 21-23, 1970.

6. Claudy, J. G. Educational outcomes five years after high school. Paper presented at meetings of American Educational Research Association, New York, February 4-7, 1971.

7. Clemans, W. V. Project TALENT comes of age. Paper presented at meetings of Western Psychological Association, Seattle, Washington, April 1977.

8. Cooley, W. W. Project TALENT implications for science education. Paper presented at meetings of National Science Teachers Association and Association for the Education of Teachers of Science, Denver, March 25-30, 1965.

9. Cooley, W. W., & Miller, Judith D. Testing the test: The Project TALENT tests as a national standard. *Personnel and Guidance Journal*, *43*(10), June 1965, 1038-1044.

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11. Cooley, W. W. Canonical correlation. Paper presented at meetings of American Psychological Association, Chicago, September 7, 1965.

12. Cooley, W. W. Testing the test: Further relationships with the TALENT battery. *Personnel and Guidance Journal*, November 1965, 295-303.

13. Cooley, W. W. The Project TALENT data bank. *Journal of Educational Measurement*, *2*(2), December 1965, 134-138.

14. Cooley, W. W. Career plan changes in boys during the high school to post-high school transition. Paper presented at meetings of American Psychological Association, September 3, 1966. (Adapted from Chapter 9 of *Project TALENT One-Year Follow-Up Studies*.)

15. Cooley, W. W. Project TALENT's career development tree. Speech, February 13, 1967.

16. Cooley, W. W. Vocational interests. Paper presented at meetings of American Educational Research Association, February 18, 1967.

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18. Dailey, J. T. Into the minds of American youth. (Paper on the subject of scoring themes written by students taking the TALENT 1960 battery)

19. Dailey, J. T. Project TALENT: Progress report. Presentation at meetings of American Statistical Association, Palo Alto, California, August 23-26, 1960.

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21. Dailey, J. T., & Shaycoft, Marion F. Types of tests in Project TALENT: Standardized aptitude and achievement tests. Cooperative Research Monograph No. 9. Washington, D.C.: U.S. Government Printing Office, 1961.

22. Dailey, J. T. The study of school characteristics. Presentation at meeting of Pennsylvania Psychological Association, Hershey, Pennsylvania, May 27, 1961.

23. Dailey, J. T. The volunteer availability of manpower for specialized occupations and careers. Paper presented at meetings of American Psychological Association, New York, September 4, 1961.

24. Dailey, J. T. Intercorrelations and sex-grade differences on Project TALENT tests. January 5, 1962.

25. Dailey, J. T. Project TALENT: Results of initial analyses. Paper presented at meetings of American Educational Research Association and Association of School Administrators, Atlantic City, New Jersey, February 20, 1962.

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27. Dailey, J. T. Project TALENT use of multiple regression. August 8, 1962. (Mimeo)

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37. Flanagan, John C. A national inventory of aptitudes and abilities. University of Pittsburgh, November 1959.

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